

A CURRICULUM GUIDE FOR PUBLIC-SAFETY AND EMERGENCY-RESPONSE WORKERS

Prevention of Transmission of Human Immunodeficiency Virus and Hepatitis B Virus

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service

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National Institute for Occupational Safety and Health

A Curriculum Guide for Public-Safety and Emergency-Response Workers

Prevention of Transmission of Human Immunodeficiency Virus and Hepatitis B Virus

**Department of Health and Human Services
Public Health Service
Centers for Disease Control
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Contents

Section 1: About this Curriculum Guide

Section 2: Tips for Trainers

**Section 3: Preventing Transmission of HIV and HBV
(Lecture Outline)**

Section 4: Case Studies

Section 5: Resources

Section 6: Glossary

**Section 7: Guidelines for Prevention of Transmission of
Human Immunodeficiency Virus and Hepatitis B Virus to
Health-Care and Public-Safety Workers**

Section 8: Overheads

Section 1: ABOUT THIS CURRICULUM GUIDE

This curriculum guide, or course of study, is designed to meet the training and education needs of public safety workers and emergency medical workers who may be exposed on the job to human immunodeficiency virus (HIV) and hepatitis B virus (HBV). This curriculum guide is based on federal guidelines for preventing occupational transmission, or spread, of HIV and HBV among worker groups. These include public-safety workers (fire service, law enforcement, and correctional facility personnel) and emergency-medical workers (emergency-medical technicians and paramedics).

The Centers for Disease Control (CDC) wrote the guidelines with input from representatives of each public safety group. The guidelines, called "Guidelines for Prevention of Transmission of Human Immunodeficiency Virus and Hepatitis B Virus to Health-Care and Public-Safety Workers," are included in this guide.

What does the curriculum cover?

The curriculum is a model that you can adapt to fit the needs of your organization. As such, it covers how HIV and HBV are spread; personal prevention practices; universal precautions; protective equipment; specific workplace prevention practices, including decontamination; and management of exposures.

Who can benefit from this curriculum guide?

Whether you train public-safety worker managers or line staff, this guide was written for you. You may be a fulltime trainer or someone whose parttime responsibilities include providing training. This trainer group includes administrators, public health officials, and policy makers.

What will a public-safety worker who completes the curriculum be able to do?

- Recognize the definitions of HIV, HBV and AIDS
- Identify how HIV and HBV are transmitted
- Recognize who is at risk of infection
- Identify personal behaviors and practices that protect people from risk of HIV and HBV infection
- Identify workplace situations in which people may encounter HIV and HBV
- Identify situations in which wearing masks, gloves, eyewear, and gowns is recommended
- Identify recommended protective equipment and devices and methods of disinfecting and sterilizing them
- State correct procedures for needle disposal; handwashing; handling specimens, spills, and soiled laundry; resuscitation; cleaning surfaces; conducting searches; and collecting evidence

- Recognize local laws and department policies regarding testing, confidentiality, and reporting procedures

Added benefits of learner involvement include reducing on-the-job stress related to HIV and HBV transmission and identifying personal values and opinions about AIDS and their effects on job performance.

How long will it take to complete the curriculum?

About four hours. However, length will vary according to the previous training and experience of the participants, and the number of case studies you choose to cover. Section 4, "Case Studies," includes a range of case studies.

Effective training is timely and frequent. Schedule regular, ongoing sessions to follow the initial course. You may incorporate these into existing department training schedules, structures, and programs. See Section 2, "Tips for Trainers," for suggestions on conducting initial and follow-up sessions.

How is the guide organized?

The guide is organized in eight sections.

Section 1, "About This Curriculum Guide," introduces the form and content of the curriculum guide.

Section 2, "Tips for Trainers," describes some ways to plan, deliver, and evaluate training.

Section 3, "Preventing Transmission of HIV and HBV for Public-Safety Workers and Emergency-Medical Workers," is a lecture outline that you may want to use in your training session. It covers basic information on the definition and transmission of HIV and HBV, precautionary measures and protective equipment, decontamination, and management of exposure.

Section 4, "Case Studies," includes realistic descriptions of incidents that might occur during the performance of duty. They provide opportunities for learners to practice making decisions about appropriate responses.

Section 5, "Resources," lists sources of information related to each public safety worker group, including print and audiovisual materials, organizations and clearinghouses.

Section 6, "Glossary," defines HIV- and HBV-related terms.

Section 7, "Guidelines for Prevention of Transmission of Hepatitis B Virus and Human Immunodeficiency Virus to Health-Care and Public-Safety Workers," provides the CDC guidelines.

Section 8 contains the overheads for the lecture outline.

How should you use this guide?

To increase your knowledge about the subject. Study the lecture outline in Section 3. Then use some of the resource materials listed in Section 5 to develop the fullest possible understanding of the subject.

To plan and present your training program. See Section 2, "Tips for Trainers," for some approaches, including a checklist and evaluation materials. Use the resource lists in Section 5 to order audiovisual aids and handout materials.

This guide is only a starting point. Use, modify, and customize the curriculum to accommodate local situations, resources, and needs. Supplement it with references to your state and local laws, guidelines, policies, and procedures. Adapt, sequence, and schedule training to fit your organization's special circumstances, issues, and problems. Try to get all points across in your own words and in the language of the learners.

The subject of this curriculum is dynamic; for example, although information about transmission of HIV and HBV has been well established; the numbers of infected people do change. Therefore, consider this curriculum as a general introduction to the subject. To update the curriculum with new information as it becomes available, consult the organizations and clearinghouses listed in Section 5, "Resources," as well as other sources.

Section 2: TIPS FOR TRAINERS

Schedule training to be timely and frequent

To address serious concerns and to clear up any misunderstandings about virus transmission and AIDS, training should begin as soon as possible and occur regularly. For new staff recruits, training should be a part of their orientation on or before the first day on the job. For all staff, provide frequent, periodic training to review the facts, practice performing special procedures, and introduce new information as it becomes available.

In follow-up sessions, you may ask learners to bring in their own examples of cases they would like to discuss, or you may choose to discuss an incident in your district.

Involve others in the training process

Seek the help of peer workers, public health officials, health and safety committees, union and management representatives, and others in planning the agenda, preparing materials, and teaching the curriculum. Their involvement will help make the curriculum appropriate and practical as well as accurate.

Peer worker participation, in particular, often lends credibility to the training. Their first-hand experience can ensure a strong link between the training session and the workplace.

You can use experienced workers and other specialists to give brief lectures, present case studies and conduct follow-up discussions, field question-and-answer sessions, demonstrate how to use protective equipment, and so on.

Prepare yourself

Be sure that you and your cooperating trainers know the subjects you present, and are sensitive to the issues that can be raised. Use Section 5 to acquire resource materials. Study them well, together with information that relates to your own local area.

Have discussions about the topic with some of your fellow workers or other people who are concerned about the topic. Those talks will bring out many of the questions and issues that you will encounter later in the training sessions.

Identify learning objectives

Base the training on the skills the learners must use on their jobs. Training should also address learners' concerns, perceptions, and knowledge gaps.

Clarify what learners will be able to do as a result of training so that you can explain what you will cover in the curriculum and what follow-up sessions will address. You might want to begin by reviewing the objectives in Section 1, "About This Curriculum Guide." Pick the most appropriate options that are listed under the section heading, "What will a public safety worker who completes the curriculum be able to do?"

Determine the curriculum

The curriculum you teach should be related specifically to workplace situations and concerns. You should supplement the basic information presented in Section 3, the lecture outline, of this guide with subjects of specific concern to the learners. For example, subjects relating to law enforcement officers include search and arrest procedures.

Throughout the presentation of material in the lecture, you, the trainer, will be asked to present information that pertains to your local jurisdiction. For example, you will need to explain standard operating procedures that apply to specific tasks in your jurisdiction and you may need to explain state or local laws (for example, laws that govern whether or not you can test a suspected carrier of HIV or HBV). You need to make sure you know these procedures and laws.

Create a good climate for learning

During training, the atmosphere should encourage openness. Success depends on people feeling free to actively participate, to comment, to question, and to give feedback. Actively listening is as important as actively participating.

Think about the training sessions you've enjoyed attending most. If there was a team of trainers, how did the members relate to one another? Was there a chance for you to ask questions? Were you talked at the whole time or did you get a chance to speak too?

Here are some ways to set a positive, supportive tone.

Introduce yourself and other trainers

Clarify your roles and responsibilities.

Describe the course

Explain what skills the participants will be able to use on the job as a result of successful learning. Describe the activities and time involved.

Encourage questions

Find out what learners want to know. Reserve time for a question-and-answer period. Acknowledge learners' comments, questions, and concerns, and provide immediate response or offer suggestions for appropriate sources of information.

Be alert to learner attitudes

Note body language and tone of voice. There may be apprehension, reserve, skepticism, even hostility about some of these topics. Try to acknowledge and deal with these attitudes without putting any one person on the spot.

Listen

Your training needs to be in touch with what the learners know and believe. Meaningful learning will occur when their feelings, concerns, and issues are addressed.

Work well with other trainers

Successful team training requires planning. Do some team building with the others who will participate before training begins. Don't wait until the training session to discover differences of opinion.

Before the training begins, take time to discuss your own and each other's attitudes about the subject and the issues that you will cover. Share expectations and personal limitations. Discuss how each person will handle sensitive issues. Explore the areas in which you feel confident and those in which you need support. Enlist the help of others who have strengths in your weak areas.

Rehearse what you are going to do. Each team member should have a clear place and purpose on the program. During the training session, avoid interrupting each other. The trainer who has the floor should not hesitate to call on another to help clarify or expand on points.

Evaluate learning

Pre- and Posttests

Several of the objectives in this training session will involve learning factual information (for example, how HIV is transmitted). That type of learning can be tested by giving a brief quiz at the end of the session. (Sample Form 1 is an example of a possible pre/posttest. It can be found at the end of this section.)

You might also give the same quiz as a pretest at the beginning of the session. Not only will that give you an idea of how much was actually learned during the session, but it will also set the participants' minds toward learning those answers they did not know.

On-the-job evaluations

The primary aim of the curriculum is to train learners to use infection control principles in the performance of their jobs so that they will minimize their risk of coming into contact with HIV and HBV.

You may want to request reports of supervisors indicating the carry over of training onto the job. The more precisely you define the outcomes to observe, the more you can structure the curriculum to produce those outcomes. Ask these kinds of questions: "Can the worker demonstrate how to remove contaminated protective gloves?" Or, "Can the worker name the protective equipment and devices that must be on an emergency transport vehicle?"

Ask learners to report--verbally in an interview or in writing on a form--critical incidents in which the curriculum affected their performance. This approach to evaluation reinforces learning by encouraging learners to apply what they have learned from the curriculum to their experiences on the job. Sample Form 3 provided at the end of this section may be used to gather information from learners who have participated in the curriculum.

Evaluate the training session

Both trainers and learners should be given the opportunity to comment on the success of the training session. Future sessions can be refined and strengthened by information gathered during past evaluations.

Evaluation by trainers

After the session, get the training team together for an evaluation session. Use all the information you have--your observations and reactions, learner reactions and recommendations, comments of observers or consultants, opinions of supervisors, and so on. Focus on what happened during the training and how the training compared with your original plan.

Ask yourselves these questions:

- Do the learning objectives still seem clear and realistic? Did you achieve them? What was especially helpful in achieving them and what hindered achievement?
- Did the course design work out the way you expected? Where did the training not follow the design? Why?
- Was there enough time to introduce the material, address learners' questions, and summarize the content?
- Would you change the course design? What would you include or omit?
- Was there resistance to any of the training topics? Were there points on which someone was reluctant to speak or even listen?
- Were you uncomfortable with any parts of the course, or in answering any of the learners' questions? If so, what can be done to overcome this discomfort?

Sample Form 2 provided at the end of this section may be useful when gathering information from other trainers.

Evaluation by learners

The use of training evaluation forms is common. Two sample forms are included at the end of this section. Sample Form 3 can be distributed to learners at the end of each training session. It will provide the learner's immediate reaction to the session. Sample Form 4 is an example of a long-term evaluation. It can be sent to learners after they return to their jobs, and will provide information about how learners are using the skills and knowledge acquired as a result of the curriculum. You may wish to adapt these forms for your own use.

Try to gather specific data that will be useful in planning future sessions. For example, you get more information out of answers to "What could be changed to make the training session better for you?" than "The training session was ()good ()fair ()poor."

As a general rule, try to get the participants to tell you: 1) what they found most positive about the session; 2) what did not work for them; and 3) what seemed to be missing.

Checklist for planning a training session

Place

- ___ Consider location, availability, and comfortable environments for small groups.
- ___ If advance notice is required to reserve space, with whom should you check? If the room must be unlocked, who has the key?
- ___ How will the room be set up? Chairs only, or chairs at tables? Chair toward front or in a circle? Who will set it up?
- ___ It may be helpful to draw a sketch indicating how you would like the room to be set up.

Materials and supplies

- ___ Prepare learner handouts such as local laws/guidelines/policies/procedures/reporting forms, brochures.
- ___ Gather name tags, markers, pens, pencils, and flip charts.
- ___ If refreshments will be offered, check supplies.
- ___ If you use audiovisual materials, have you or a consultant previewed them for suitability?
- ___ Pre- and posttests. Training evaluation forms.

Equipment

- ___ Reserve the slide projector, screen, audio- or videocassette player, and other equipment. Who will make sure they are working and set up? Will everyone be able to see the visuals?
- ___ If you are showing slides, are they arranged in order, right side up?
- ___ Will someone who knows how to run the equipment be there?

Other trainers

- ___ Arrange and coordinate the participation of all training staff and consultants.
- ___ Remind others of their participation in the session.
- ___ Clarify what they will do and how it fits into the overall training.
- ___ Provide everyone copies of all needed materials.

Posttest Questionnaire
(may be used as a pretest also)

1. The viruses that cause AIDS and hepatitis B can only live in blood or in certain body fluids.
_____ True _____ False
2. The following behaviors or situations will put you at risk of being exposed to human immunodeficiency virus (HIV) which is the virus that causes AIDS
(check as many as are true):
_____ Anal sex
_____ Sex with one partner who has been tested and shown HIV-negative
_____ Sharing drug needles
_____ Sharing living or working space and cooking utensils with an infected person.
3. More people have been infected with the virus that causes hepatitis B during the performance of work-related duties than with the virus that causes AIDS.
_____ True _____ False
4. If you cannot determine what body fluids are present in emergency situation, you should wear gloves.
_____ True _____ False
5. Protective equipment (gloves, eyewear, masks, and gowns) should be present on all emergency response vehicles.
_____ True _____ False
6. There are documented cases of the virus that causes AIDS being transmitted to health care workers who gave mouth-to-mouth resuscitation.
_____ True _____ False
7. In a dry environment, the virus that causes AIDS can only live:
_____ several hours
_____ several days
_____ 2 weeks
8. Needles used at the emergency care site should be recapped before carrying them back to the emergency response vehicle to be put into a puncture-resistant container.
_____ True _____ False
9. A bleach solution (1:100) is adequate to kill the viruses that cause AIDS and hepatitis B on equipment and environmental surfaces.
_____ True _____ False
10. The most effective way for HIV or HBV to be transmitted in an occupational setting is through a needlestick.
_____ True _____ False

(To the trainer: You may want to add questions that pertain to your standard operating procedures to this questionnaire.)

Answers:

- 1. True**
- 2. Anal sex, sharing drug needles**
- 3. True**
- 4. True**
- 5. True**
- 6. False**
- 7. Several hours**
- 8. False**
- 9. True**
- 10. True**

Sample Form 2

Trainer Evaluation of Session

Title of Session _____ Date _____

Department _____

Trainer _____

Other trainers and consultants (if any) _____

1. Did all learners achieve the instructional objectives?
2. Which objectives were many learners unable to achieve?
3. (a) Which sections of the course did learners enjoy most? Why?

(b) Which sections of the course did learners enjoy least? Why?

(c) Which sections of the course were most successful at making a difficult task easy to learn? (This would be shown by observation of learners' grasp of knowledge during the case studies and by their comments on the usefulness of these sections.)
4. (a) With which sections of the curriculum did learners have the most trouble?

(b) Why were these sections difficult (e.g., were they unclear, too long, unnecessary, etc.)?
5. What improvement could be made to solve or minimize those problems?
6. How could this course be made more cost-effective?
7. What follow-up support is needed?

Sample Form 3

Learner Evaluation of Session

Date:_____ **Your name (optional):**_____

Instructions: Please complete this form and return it to the trainer after the session. Use the back of this page if you need more space for any item. Thank you for helping improve the curriculum.

- 1. What is the single most important information, skill, or procedure that you learned in the session?**

- 2. Did you feel comfortable asking questions? If not, why not?**

- 3. What could be changed to make the curriculum better for you?**

- 4. What special issues, concerns, or questions would you have like to have raised?**

- 5. Do you have any comments/suggestions/questions/etc. that you would like to raise?**
Please write them in the space below.

Sample Form 4

Learner Evaluation of Session Over Time

To the Learner:

On _____ you took part in a training curriculum. We want to find out whether that session was helpful. Please complete the sentences below and return the form within a week. In some cases, you might just write, I don't know, or, This question doesn't apply to me. Your feedback will help make future sessions better. Thank you.

1. What was the single most important lesson you learned in the training course?

2. What do you do differently after having attended the training course?

3. What situations still make you uncomfortable when performing duties that have the potential for HIV or HBV transmission?

4. If you could change one thing about the curriculum, what would it be?

5. Have you done anything since the course to find out more about HIV and HBV or about anything else discussed in the curriculum?

Name (optional):_____

Date:_____

Section 3: PREVENTING HIV & HBV TRANSMISSION

Set an agenda.

Welcome learners and give an overview of the curriculum
Administer the pretest
Deliver the lecture
Discuss case studies
Administer the posttest
Evaluate the curriculum

Welcome the learners to the session.

If the learners do not know one another and the group is 25 people or less, have them introduce themselves.

Next, give the learners an overview of the curriculum by stating that they will learn about the viruses that cause AIDS and hepatitis B. This information will include:

1. How the viruses are transmitted
2. How to protect oneself against exposure to these viruses both in personal lifestyle choices and when performing job-related tasks.
3. Decontamination methods
4. Proper management if exposure occurs.

Administer the pretest (if you choose to use one)

Distribute pretest questionnaires and ask learners to complete them. (See Section 2, "Tips for Trainers," for a sample pretest questionnaire.)

Lecture Outline

The following is an outline with suggested overheads that you can use to underscore important points of your presentation. The outline covers four topics: a basic set of facts about HIV and HBV, protective equipment and procedures, decontamination, and management of exposure.

By presenting the information in the lecture outline first, you ensure that the participants have common knowledge of the subject. You may choose a case study (see Section 4) and discuss its relevant aspects following each topic presentation and discussion. This approach will vary the pace and variety of the lecture. Instructions on how to do this are in the instructions to the trainer throughout the lecture outline.

Throughout this curriculum, we have used "public-safety workers and emergency-response workers " to refer to the target audience. You should substitute the name of the group you are training: law enforcement or corrections officers, fire fighters, paramedics, emergency medical technicians.

DEFINITION AND TRANSMISSION OF HIV AND HBV

Overhead 1

1. What is AIDS?

- A-I-D-S stands for Acquired Immunodeficiency Sndrome.
- AIDS is caused by a virus called human immunodeficiency virus or HIV. This virus lives only in blood and certain other body fluids. It cannot live outside these environments.
- The outcome or manifestation of illness varies with individuals who are infected with the virus.
 - a. Some infected persons have no disease symptoms and may not show outward signs of the disease for many years.
 - b. Some infected persons suffer less severe symptoms than do those with diagnosed cases of AIDS. These lesser symptoms may include loss of appetite, weight loss, fever, night sweats, skin rashes, diarrhea, tiredness, lack of resistance to infection, and swollen lymph nodes.
 - c. AIDS is the result of the progressive destruction of a person's immune system, which is the body's defense against disease. This destruction allows diseases that the body can normally fight to threaten the person's health and life.
 1. A particularly dangerous type of pneumonia and certain other infections often invade a body weakened by HIV.
 2. HIV can also attack the nervous system and cause damage to the brain. This may take years to develop. The symptoms may include memory loss, indifference, loss of coordination, partial paralysis, or mental disorder.

2. How widespread is HIV infection?

Overhead 2

To the trainer: You may find it helpful to add state-specific data or data from your locality to the presentation at this point. These data are available from your state and local health departments and are published weekly in Morbidity and Mortality Weekly Report (published by CDC).

- As of January 1989, there were over 80,000 cases of AIDS reported in the United States. Over half of those cases have died of AIDS or AIDS-related causes. These cases have been reported from all states, the District of Columbia, Puerto Rico and the other territories.
- It is estimated that as many as 1.5 million Americans are infected with HIV. Most of these do not have symptoms of disease. We do not know how many of these will develop AIDS, but a study of a group of HIV-positive men in San Francisco showed that 48 percent developed AIDS over a 10-year period.

- Infected people represent all ages—including infants and elderly adults—all races, men and women, and all lifestyles.

Overhead 3

3. How is HIV not transmitted?

- You cannot "catch" HIV like a common cold or flu. HIV is not spread through the air like cold viruses.
- There is no medical evidence of HIV transmission by casual, everyday contact: sharing kitchens, bathrooms, laundries, eating utensils, beds, or living space with infected people.
- HIV is not transmitted in nonsexual social situations, such as at work or through sharing air, food, and water.
- There is no evidence of transmission through insects, such as mosquitoes.
- The risk of HIV infection through contact with feces, nasal secretions, saliva, sputum, sweat, tears, urine and vomitus is extremely low or nonexistent.

Overhead 4

4. What personal behaviors or practices put you at risk for infection with HIV?

- You can become infected by having homosexual or heterosexual contact—oral, anal, or vaginal—with someone who is infected with HIV.
- You can become infected by sharing drug needles and syringes with an infected person.
- An infected woman can spread HIV to her baby before it is born or during birth.
- Transfusion recipients and hemophiliacs have been infected by the blood or plasma of infected donors. However, because the blood supply has been screened for HIV since April 1985, the chance of becoming infected through transfusions now is extremely small. There is no risk of becoming infected by donating blood.

Overhead 5

5. How can you prevent HIV transmission in your personal life?

You can prevent HIV transmission by refraining from:

- anal sex, with or without a condom
- vaginal or oral sex with someone who uses intravenous drugs or engages in anal sex
- sex with someone you do not know well or with someone you know has several sex partners
- unprotected sex (without a condom) with an infected person
- sharing intravenous drug needles.

If you engage in high-risk behavior that puts you in contact with an infected individual, you can become infected with HIV. Many people think that only certain "high-risk groups" of people are infected by HIV. This is untrue. Who you are has nothing to do with whether you are in danger of being infected with HIV. What matters is what you do, and whether you practice high-risk behavior.

Overhead 6

To the trainer: On page 3 of the "Guidelines for Prevention of Transmission of Human Immunodeficiency Virus and Hepatitis B Virus to Health-Care and Public Safety Workers," (Section 7) you will find a discussion of all reported cases of AIDS among health care workers and public safety workers. You may want to be familiar with these data if there are specific questions asked in the training session.

6. Is there a problem of occupationally acquired HIV infection among public safety workers and emergency medical technicians?

There are few data on HIV infection among fire fighters, police, law enforcement and corrections officers. There are a small number of health-care workers who have become infected with HIV while performing work-related tasks that are similar to those performed by public safety workers in the delivery of emergency health care.

7. How can workers protect themselves against HIV transmission while performing their duties?

Because HIV is a virus that lives in blood, you must protect yourself against coming into contact with **blood or body fluids that contain blood**. In addition, certain body fluids present some risk of infection.

- a. Semen and vaginal secretions can contain HIV, but occupational transmission through these fluids from an infected person to a person providing emergency treatment has not been documented.

Overhead 7

- b. Because the risk of HIV and HBV infection in this group of body fluids is **unknown**, persons providing emergency care should take precautions when coming in contact with fluids that are contained in the spine, chest cavity and abdomen, and in the uterus or womb surrounding an unborn child.
- c. The risk of HIV infection through contact with feces, nasal secretions, saliva, sputum, sweat, tears, urine and vomitus is extremely low or nonexistent. However, these body fluids may carry other organisms that cause disease. Common sense dictates that you should take precautions to protect yourself.

In emergency settings, if you cannot determine whether a body fluid contains blood--or even what type of fluid it is--treat all body fluids as potentially infectious.

8. What does it mean to "come into contact"?

Overhead 8

Because the virus **must** live in blood or certain body fluids, it has to enter a body quickly and then enter the bloodstream. For public-safety workers and emergency-response workers, this can happen in several ways.

- a. The most effective way for HIV to enter the body is through a needlestick injury if that needle has been used by someone with HIV infection.
- b. If infected fluids touch the skin, intact or unbroken skin will protect against infection. However, if there is an open wound, a cut, or the skin is otherwise not intact--which means chapped, abraded, weeping, or having rashes or eruptions--the infected fluid can enter the body.
- c. If infected fluids touch the mucous membranes of the eye, nose or mouth, these surfaces can absorb the fluid and transmit the virus.

To the trainer: You may find it helpful to review information about exposures in the Guidelines (Section 7) or in the April 22, 1988 and June 15, 1988 issues of Morbidity and Mortality Weekly Report.

9. What are the relative risks of these means of infection?

Overhead 9

These entry ways of infected fluid into the body represent different risks. The needlestick entry has the most potential for transmitting HIV. Studies indicate that the risk of developing HIV infection is about 0.5% following a needlestick from a known HIV-infected person. The risk associated with mucous membrane or chapped or broken skin exposure is likely to be far lower than that associated with needlestick injuries.

Overhead 10

10. Are there ways to test blood to determine if a person is infected with HIV?

Antibodies against HIV in an infected individual's blood can be detected by a series of tests.

- Tests that show the presence of antibodies are said to be "positive."
- Persons usually develop antibody against the virus within 6-12 weeks after becoming infected.

Overhead 11

11. Are there ways to protect yourself?

- There are protective procedures and equipment that we will discuss in detail that you can use to protect yourself.
- At present, there is no vaccination against HIV.

Overhead 12

12. What is hepatitis B?

- Hepatitis B is caused by hepatitis B virus (HBV).
- Hepatitis B is a disease that causes liver damage, the severity of which can range from mild or even inapparent to severe or fatal.
 - a. Approximately 25% of infected individuals develop acute hepatitis.
 - b. Of infected individuals, 6% to 10% will become HBV carriers. Carriers are at risk of developing chronic liver disease, including active hepatitis, cirrhosis, and primary liver cancer, and are infectious to others.

Overhead 13

13. How widespread is HBV?

- In 1987, CDC estimated the total number of new HBV infections in the United States to be 300,000 per year.
- CDC estimates that 12,000 health care workers whose job-related duties involve exposure to blood become infected with HBV each year.
 - a. 500-600 health-care workers are hospitalized each year.
 - b. 200-300 infected health-care workers die each year from diseases associated with chronic or acute hepatitis caused by hepatitis B.

Overhead 14

14. What personal behaviors put you at risk for infection with HBV?

- As with the risks for HIV, you can become infected with HBV through sexual contact (anal or vaginal) with someone who is infected with HBV.
- You can become infected by sharing drug needles and syringes with an infected person.
- Since blood is screened for HBV, the chance of being infected through transfusion is extremely small.

Overhead 15

15. What situations put a public safety worker or emergency medical technician at risk?

- The same situations that cause a worker to encounter blood or other possibly infectious fluids with HIV--that is, by needlestick or contact with an open wound or broken, nonintact skin, or mucous membranes of the eyes, nose or mouth--have the potential for infection with HBV also.
- One additional body fluid has the potential for transmission of HBV. Saliva of an HBV-infected person injected into another person through a bite can transmit HBV.

Overhead 16

16. How can public safety workers or emergency medical technicians protect themselves against HBV?

The same protective equipment and procedures that will be discussed for HIV in the rest of this training session will protect the worker against HBV.

Overhead 17

17. Are there ways to test blood to determine if a person is infected with HBV?

Blood tests are available that detect antibodies for HBV in an infected person.

Overhead 18

18. Is there a vaccine against HBV?

- Available vaccines provide protection against HBV infection and provide over 90% protection against hepatitis B for 7 or more years.
- The vaccines are also 70% to 88% effective when given within one week after HBV exposure.
- Hepatitis B immune globulin (HBIG) provides some temporary protection following exposure to HBV. After exposure to the virus, a combination of the vaccine with HBIG is over 90% effective in preventing hepatitis B.

Overhead 19

19. How are HBV and HIV similar? different?

To the trainer: When reviewing the risk of infection after needlestick exposure, explain that the different rates for HIV and HBV can probably be attributed to a much lower concentration of HIV in the blood than HBV. In other words, HBV normally exists in much greater concentration than HIV does in the same amount of blood.

	<u>HBV</u>	<u>HIV</u>
Mode of transmission:		
Blood	yes	yes
Semen	yes	yes
Vaginal secretion	yes	yes
Saliva (from a bite)	yes	no
Target in the body	liver	immune system
Risk of infection after needlestick exposure to infected blood	6-30%	0.5%
High number of viruses in blood	yes	no
Vaccine available	yes	no

PRECAUTIONARY MEASURES AND PROTECTIVE EQUIPMENT

Overhead 20

To the trainer: It would be helpful to have the equipment in class with you so that the learners know exactly what you are talking about. You should also make sure that everyone knows how to use the equipment. You should demonstrate, for example, how to properly take the gloves off so that blood or other material that is on the glove does not contaminate other surfaces.

1. What is standard personal protective equipment?

- **Gloves** are standard equipment. Disposable gloves should be put on before beginning any tasks involving exposure to blood or body fluids that are associated with HIV and HBV infection or those that you cannot identify because of circumstances in an emergency setting. Heavy gloves offer protection against sharp surfaces.
 - a. No one type of glove is appropriate for all situations. The worker must use judgement concerning the advantages of the type of glove or the combination of gloves to use that gives a balance of protection against fluids and sharp objects, yet allowing dexterity.
 - b. In situations involving broken glass or sharp edges, gloves that meet OSHA requirements should be worn. Each situation will require your personal judgement concerning the use of disposable gloves under heavy gloves meant for protection against sharp edges.
 - c. Change gloves if they are torn or soiled, and always remove them before leaving the scene. While wearing the gloves, avoid touching personal items, such as a comb. Also avoid touching your face, eyes, etc.
 - d. Change gloves between handling of different people (for example, change gloves when finishing with one victim of a crash before touching another victim).
- **Masks, eyewear, and gowns** should be present on all emergency response vehicles that respond to medical emergencies or victim rescues. How and when you use masks, eyewear, and gowns depends on the situation.
 - a. Management of the person who is not bleeding, and who has no bloody fluids present, should not routinely require use of masks, eyewear, or gowns.
 - b. Masks and eyewear should be worn together, or a faceshield should be used if splashes of blood or potentially contaminated body fluids are likely to occur. Surgical masks offer adequate protection for mucous membranes of the mouth and nose.
 - c. Gowns or aprons that do not allow fluids to pass through should be worn if necessary to avoid soaking of clothes.

Overhead 21

- **Resuscitation equipment** should be available on all emergency response vehicles even though no transmission of HIV or HBV infection during mouth-to-mouth resuscitation has been documented. Again, other diseases can be transmitted during this emergency procedure, and common sense dictates that you should protect yourself against possible infection.
- a. Mechanical respiratory devices (for example, bag-valve masks, oxygen demand valve resuscitators) should be available on all emergency response vehicles and to all emergency response personnel who may respond to medical emergencies or victim rescues.
- b. Pocket mouth-to-mouth resuscitation masks should be provided to all personnel who may provide emergency treatment.

Overhead 22

2. How can you protect yourself against infection with HIV and HBV?

- All personnel who perform tasks that put them in direct contact with blood or potentially infectious body fluids, either routinely or in emergency situations, should be vaccinated against HBV.
- Wear disposable gloves in all situations where there is blood or bodily fluids that have the potential of HIV contamination. You should also wear disposable gloves if you cannot, in an emergency situation, determine if the fluids are potentially infectious.
- Put on the appropriate personal protective equipment before beginning a procedure if the chance of exposure to blood is high (for example, IV insertion, trauma, delivering babies).
- Personal protective equipment should be available on emergency response vehicles for emergency situations. Equipment should also be available in facilities and in IV drug kits at all times.

3. Procedures for Specific Situations and Incidents

At this point in the training you should instruct the learners about procedures specific to your jurisdiction. You may want to refer to pages 17-27 in the "Guidelines" for information concerning CDC recommendations that pertain to fire and emergency medical personnel, and law enforcement and correctional facility officers.

CASE STUDIES

To the trainer: At this time, you may choose to have the group work on one of the case studies. (See Section 4 for case studies appropriate for firefighters/emergency medical technicians, law enforcement officers and corrections officers.) You should only discuss issues related to protective equipment and procedures. The advantage of using case studies at this point is the immediate reinforcement of information just presented and the placing of theoretical information into a "real" situation.

DISINFECTION, DECONTAMINATION, AND DISPOSAL

To the trainer: Some workers have expressed concern about how long HIV and HBV can live in the environment, especially once the medium (blood or body fluid) that it lives in dries. You may wish to discuss this by presenting this information.

Overhead 23

Viability of HIV and HBV in the Environment

1. Studies at CDC have shown that drying causes a 90%-99% reduction of HIV concentration within several hours.
2. HBV can live in a dry environment for a longer period than can HIV (for at least 7 days and perhaps much longer).
3. Once the virus is no longer active in dry material, it cannot be "reconstituted" by adding water. A dead virus is a dead virus. Some manufacturers claim to have special products that are necessary to kill HIV on environmental surfaces. These are not necessary. The cleaning agents needed to kill the viruses will be explained in detail in this section.
4. One extensive study* of this subject which is often quoted in publications found that HIV lived 1-3 days after drying in greatly concentrated HIV samples (10 million infectious doses per milliliter). This concentration is at least 100,000 times greater than that typically found in the blood of patients with HIV infection. This study does not in any way represent a "natural" situation.

* Resnik L, Veren K, Salahuddin SZ, Tondreau S., Markham PD. Stability and inactivation of HTLV-III/LAV under clinical and laboratory environments. JAMA 1986;255:1887-91.

1. Needles and sharps disposal

- Needles should not be recapped, purposely bent or broken by hand, removed from disposable syringes, or otherwise manipulated by hand. Avoid allowing the tip of the used needle to touch any part of your body.
- After use, disposable blades and other sharp items should be placed in puncture-resistant containers for disposal.
- Puncture-resistant containers should be located as close as practical to the use area. If sharps are carried from the emergency response vehicle to the scene of victim assistance, a puncture-resistant container should be carried to the scene, also.
- Reusable needles should be placed in a puncture-resistant container for transport to the reprocessing area.

Overhead 24

Overhead 25

2. Handwashing: Hands must be washed immediately after each contact with a potentially contaminated person or articles. Use ordinary soaps. There is no need to use soaps with antimicrobial agents.

- a. Use a utility or restroom sink for handwashing. Food preparation areas should not be used for decontamination or handwashing.
- b. When proper facilities are available, wash hands with soap and water.
- c. Waterless antiseptic hand cleanser should be available on response vehicles. When using waterless cleanser, follow the manufacturer's recommendations for use.

Overhead 26

3. Cleaning, disinfecting, and sterilizing: Current recommendations for standard cleaning, sterilization, and disinfection procedures for patient-care equipment are adequate for instruments, devices, or other items contaminated with blood or other infectious material from persons infected with HIV or HBV.

Carefully read the labels and package inserts with germicidal products and follow instructions for use and safety.

Sterilization: destroys all forms of microbial life.

Use for instruments or devices that penetrate the skin or contact normally sterile parts of the body (for example, scalpels and needles). Often, arrangements can be made with a health-care facility for processing of reusable invasive instruments.

Methods:

- steam under pressure (autoclave)
- gas (ethylene oxide)
- dry heat
- immersion in EPA-approved chemical sterilant for prolonged period (6-10 hours or according to manufacturer's instructions). These chemicals should be used **only** if it is impossible to sterilize or disinfect an instrument with a heat process.

High-level Disinfection: destroys all forms of microbial life except high numbers of bacterial spores.

Use for reusable instruments that come into contact with mucous membranes (laryngoscope blades, endotracheal tubes, etc.)

Methods:

- hot water pasteurization (80-100 degrees C for 30 minutes)
- exposure to an EPA-registered chemical sterilant as above, except for a short contact time (for 10-45 minutes or as directed by the manufacturer).

Intermediate-level Disinfectant: destroys *mycobacterium tuberculosis*, most viruses, vegetative bacteria, and most fungi, but not bacterial spores.

Use for surfaces that come into contact with intact skin (stethoscopes, blood pressure cuffs, splints, etc.) and that have been visibly contaminated with blood or body fluids. Surfaces must be precleaned of visible material before disinfection.

Methods:

- use of EPA-registered "hospital disinfectant" chemical germicides that claim to be tuberculocidal on the label.
- hard-surface germicides as indicated above or solutions containing at least 500 ppm free available chlorine (1:100 dilution of common household bleach—approximately 1/4 cup bleach per gallon of water).

Low-level Disinfection: destroys some viruses, most bacteria, some fungi, but not *mycobacterium tuberculosis* or bacterial spores.

Use for routine housekeeping or removal of soiling when there is no visible blood.

Method:

- use of EPA-registered "hospital disinfectants" (no claim on label for tuberculocidal activity).

Environmental Disinfection: Surfaces in the environment such as floors, ambulance seats, countertops, woodwork, etc. that have become soiled should be cleaned and disinfected with cleaners or disinfectant agents intended for environmental use.

4. Cleaning and decontaminating spills of blood

Overhead 27

- First, put on disposable gloves and remove visible material by cleaning with disposable towels or another means that will ensure against direct skin contact with blood. Place soiled towelling in a plastic bag to prevent contamination with other surfaces.
- Wear appropriate face and eye protection if you anticipate splashing.
- If the amount of blood in the area is great, wear shoe coverings that will not allow blood and fluids to seep through.
- After removal of visible material, decontaminate with appropriate germicide or a 1:100 solution of household bleach. Use clean towels with germicide to wipe area. Let the area air dry.
- After decontamination of the area, remove contaminated items, shoe coverings, and gloves and place in plastic bag for disposal or decontamination. Remove gloves last.
- Wash hands after removing gloves.

Overhead 28

5. Laundry: Although soiled clothing or linen may contain organisms that cause disease, the risk of actual disease transmission is negligible. Therefore, simple hygienic measures for handling and washing linens are recommended.

- Handle soiled linens as little as possible to prevent contamination of the air and of persons handling the linen.
- Bag all soiled linen at the location where it was used. Place linens soiled with blood in bags that prevent leakage.
- Wash linens in normal laundry cycles according to the recommendations or instructions of the washing machine and detergent manufacturers.

Overhead 29

6. Decontamination and laundering of protective clothing:

- Transport clothing in bags or containers that prevent leakage.
- Wear gloves when bagging and placing contaminated clothing into the washer.
- Station and work uniforms should be washed and dried according to the instructions on their labels.

7. Infective waste: Identifying wastes that require special precaution in disposal is largely a matter of judgement about the risk that the waste represents. **In all cases, follow local regulations carefully concerning disposal procedures.**

CASE STUDIES

To the trainer: Return to the case study discussion. At this time, discuss decontamination issues that are relevant to that case. If you chose a case study that does not present any decontamination issues, choose a new case study that does.

MANAGEMENT OF EXPOSURES

Overhead 30

1. What is an "exposure"?

Contact with blood or potentially infectious body fluids through the following methods:

- Needlesticks (HIV and HBV)
- Contact of blood or blood-contaminated body fluids with chapped or nonintact skin, open wounds or mucous membranes (HIV and HBV)
- Saliva in a human bite (HBV)

An exposed worker is one who is exposed while performing normal job duties.

2. Does it matter if we know or not that the source of blood or body fluids was infected with HIV or HBV?

The persons who are the source of blood or potentially infectious body fluids that the worker was exposed to may be known carriers of HIV or HBV. Or their status may be unknown. In either case, this is an exposure. The follow-up procedures in both cases vary as we will explain in the information that is to follow.

3. How should an exposure be handled?

- Workers who have been exposed in the ways already described should immediately wash the affected area. If the area is mucous membranes, flush the area with water. If the exposed area is skin, wash with soap and water.
- The exposed worker should be referred to the proper medical authority for assessment, counseling, and preventive treatment as is appropriate. Some types of exposure, for example, from a human bite, require attention to prevent other types of infection.

4. Procedures for Reporting Exposures

Introduce standard operating procedures used in your jurisdiction for the reporting of possible exposures and any other issues relating to this area that are relative.

CASE STUDIES

Return to the case study discussion. At this time, discuss reporting issues that are relevant to that case. If you chose a case study that does not present any reporting issues, choose a new case study that does.

Administer the posttest and evaluation

After the lecture outline and case studies are done, make sure no one has any additional questions.

Then distribute the posttest and ask learners to complete the questionnaire. If you intend to ask learners to complete an evaluation form, have them do so now before closing the training session.

Section 4: CASE STUDIES

The following case studies describe workplace situations and issues that are likely to challenge public safety workers and emergency-medical workers.

Discuss those cases that are appropriate to the learner group. You should personalize the case studies by adding information about what emergency transport vehicles would be dispatched to the scene according to your standard operating procedures, and make substitutions in the text that will make the case studies more relevant to your department.

You may also choose to substitute situations and issues that have come up in your district. Or, especially in follow-up sessions, you might ask learners to share experiences, either real or hypothetical. When you tailor training in this way, the curriculum becomes more relevant.

The pages that follow contain the case studies that may be copied and handed out to each of the learners. The discussion questions are included with the case study to facilitate the discussion. During the group interaction, it is very important that everyone joins in the discussion. In this learner situation, the people in the class as well as the trainer can bring a wealth of experience to the class.

The lecture outline and the "Guidelines" (Section 7) will provide information specific to transmission of the viruses and background information. The trainer should also be ready to apply local operating procedures and laws to these case studies.

Discuss issues in small groups

If the training session has 20 to 25 or more learners, consider introducing the case and the issues raised, and then breaking the group into small groups of 4 to 6 persons.

Tell all groups that they will come back together at a certain time. The amount of time spent discussing a case depends on the time you have allocated to the entire course and how many cases you want to discuss. A recommended amount of time would be about 10 to 15 minutes for one part of the case study, 30 minutes for an entire case study.

Allow time for representatives to report the small group discussion summaries to the total group for further discussion.

Another option is to assign specific issues or questions to each small group for discussion and feedback to the total group.

For more suggestions on leading discussions, see Section 2, "Tips for Trainers."

Be informed about local law concerning ethical/legal issues

During case study discussions, learners may raise issues that require you to know relevant laws, policies, goals, and procedures. Consult with local counsel, supervisors, and other authorities. For example, if the question comes up, "Do you have the right to refuse to treat someone you know or suspect is HIV- or HBV-positive?" you must be able to cite the law.

Other questions that learners might raise include, "Do you have the right to delay treatment of someone you know or suspect is HIV- or HBV-positive?" "Do you have the right to refuse to work with someone who is HIV- or HBV-positive?" "Do you have the right to be told if an individual you are treating is HIV- or HBV-positive?" "Do you have the right to be told if a person you are working with is HIV- or HBV-positive?" "If you have suffered an exposure, do you have the right to know if the source person is HIV- or HBV-positive?"

AUTO ACCIDENT

When the call comes in: At approximately 1030 hours, you are dispatched to a report of a motor vehicle accident involving two vehicles.

When you arrive on the scene, you find the following:

In the first car, the driver looks like a pregnant woman in her 30's who is conscious and trapped in the car. She has severe lacerations to facial and head area and her left arm is covered with shattered glass.

The passenger, a young child, is conscious and has minor lacerations.

In the second car, the driver, a male who looks about 20 years old, escaped from the vehicle with severe lacerations, including a 4-inch gash on his arm and a bleeding forehead.

The passenger, an unconscious female who looks about 18 years old, is not breathing and has multiple lacerations. You cannot get a pulse.

Blood and vomitus are on the ground and on the victims. Broken and shattered glass, jagged metal, and gasoline spills are everywhere. It is cold and drizzling rain.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

Stabbing

When the call comes in: At 0200 hours you are dispatched to a reported stabbing of a woman in a hotel that is known to be frequented by prostitutes.

You work in a community where the normal emergency response for nonbreathing patients is the nearest engine company.

When you arrive on the scene, you find a woman in bed bleeding from 2 stab wounds in the chest area. She is unconscious and has labored breathing. Red frothy sputum seeps from her mouth. Drug paraphernalia is on the bedside table.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

House fire

When the call comes in: At 0200 hours, you are dispatched to a house fire.

When you arrive on the scene you find a working interior fire in progress.

Primary search: You find a male in his mid-30s unconscious, apparently suffering from smoke. Once he has been pulled out of the house, you determine that he is not breathing but has a heartbeat. He has third-degree burns on 30 percent of his body.

Secondary search: As a result of the primary search, you find a mid-30-year-old female lying unconscious on the kitchen floor. She has third-degree burns on 20 to 30 percent of her body. When treatment begins, she wakes up and becomes combative.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

Nursing home patient

When the call comes in: At 0900 hours, you are dispatched to a report of an 85-year-old female patient in a nursing home; she is unconscious.

When you arrive on the scene, you find an incontinent elderly woman lying in bed not breathing. Two orderlies are administering chest compressions and bagging her. She has already vomited once. You remember that you have a cold sore in your mouth.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

Man with labored breathing

When the call comes in: At 2000 hours, you are dispatched to a report of a 55-year-old man experiencing labored breathing.

When you arrive on the scene, you find a 55-year-old male sitting in a chair, leaning forward, coughing blood-tinged sputum. His breathing is noisy and he spits frequently.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

Swimming accident

When the call comes in: At 1430 hours, you are dispatched to a report of a near drowning of a small child in a neighbor's swimming pool.

When you arrive on the scene, you find a small child lying unconscious on the ground. Her mother is next to her and hysterical. She says that she pulled the child out of the pool a few minutes ago, but does not know how to give CPR.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

Stomach pains

When the call comes in: At 2200 hours, you are dispatched to a report of a 27-year-old male with stomach pains.

When you arrive on the scene, you find that two men occupy the home. A man in his late 20s meets you at the door and says that his friend in the bedroom has been having severe stomach pains. You remember that you have a cut on your hand.

The patient: When you enter the bedroom, you find a male in his late 20s lying in bed doubled over in pain.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

Barroom fight

When the call comes in: At 10:00 p.m., your car is dispatched to a report of a fight in a local bar.

When you arrive on the scene, 2 men are in a violent fight; one has a knife. Both are injured and bleeding at mouth, nose, arms, and hands. As you approach the men, you order them to break up the fight. They ignore you. Your partner draws his nightstick and tries to break up the fight. As he approaches the men, he slips and falls down. You subdue the other man and handcuff him. Next, you pull the man with the knife off your partner and hold him to the ground.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

Shots fired

When the call comes in: At 11:00 p.m., you are dispatched to a report of shots being fired at a residence that you know is a drug house.

When you arrive on the scene, the front door is wide open. After checking carefully for anyone with a weapon, you enter. A man is lying on the floor in a pool of blood; he appears to be dead. You hear moaning in another room, and go to find a woman in the bed who is shot in the side and bleeding profusely. Blood is on her dress and all over the bed. Drug paraphernalia is on a bedside table.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

Swimming accident

When the call comes in: At 2:30 p.m., you are dispatched to a report of a near-drowning of a young child.

When you arrive on the scene, a 6-year-old girl is lying unconscious on the ground. Her hysterical mother tells you that she pulled her child out of the pool a few minutes ago, but does not know how to give CPR. You receive a radio report that tells you that the ambulance has been held up in traffic. You remember that you have a cold sore in your mouth.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

Drug Bust

When the call comes in: Several merchants have complained about the sale and use of IV drugs in their parking lots. As a result, you are one of two undercover officers who have been staking out the area for several weeks.

When you arrive on the scene, you observe two people who show suspicious behavior in a parked car. You and your partner approach the car from behind and observe that they have narcotics paraphernalia and are preparing to shoot up. You arrest the suspects, and search and handcuff them. Next, you conduct a thorough search of the vehicle.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

Auto Accident

When the call comes in: At 11:00 p.m., 2 cars are dispatched to a report of a personal injury accident. The accident is on a major highway and involves 3 seriously injured people.

When you arrive on the scene:

In the first car, the driver looks about 35 years old. He has severe facial lacerations, and is semi-conscious and trapped in the car.

In the second car, the driver looks about 30 years old and in her last months of pregnancy. She is hysterical because she is delivering her baby. She hit her head on the windshield and has a slight laceration on her head.

A female passenger looks about 35 years old. She has serious chest wounds and pulsating arterial bleeding. Blood is spurting out, but she is conscious.

You remember that your lips are chapped and cracked.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

Man falls downtown

When the call comes in: It is 12:30 p.m. and you are dispatched to a report of a disturbance downtown.

When you arrive on the scene, a small crowd is gathered around a 40-year-old man lying on the ground. A witness says that he saw the man walking and then go into convulsions and fall to the ground. You recognize the man on the ground as a known drug user. He is unconscious and you cannot find a pulse. CPR is indicated. You are 5 minutes from the nearest hospital.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

Violent male outside house

When the call comes in: At 2:00 p.m., you have been dispatched to a report of an extremely violent, distraught person who is yelling and screaming in the front yard.

When you arrive on the scene, you find a 39-year-old male outside the house screaming "Take me to the hospital! I'm dying! I'm dying!" A witness who identifies herself as a close relative tells you that he is suffering from the later stages of AIDS and has lost control of his mental reasoning. When you approach him, he becomes violent and tells you he's going to kill you.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

Gay rights rally

When the call comes in: You are a part of a team that is assigned to control the order of a gay rights demonstration.

When you arrive on the scene, you witness a violation of a local ordinance when a demonstrator trespasses on private property. You must arrest that person. The person resists arrest and bites you. To protect yourself, you restrain and handcuff the person.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

Fight

Your assignment: You are called to assist in the break-up of a fight on the cell block.

When you arrive on the scene, you find one of the inmates using a homemade knife. He has cut another inmate who is bleeding profusely. Both are bloody around the face and hands. The inmate with the weapon has pinned down the other inmate on the ground and is preparing to slash his throat.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

Inmate collapses

Your assignment: Making regular rounds.

When you arrive on the scene, you are in the television room making your regular rounds. You see a prisoner collapse and in need of CPR. Forty other inmates have gathered around to see what you are going to do. You are the only one in the immediate area that can administer CPR.

You begin giving CPR and in the process, the inmate vomits. The inmate looks very bad and in need of additional CPR. The medical team has not yet arrived. You remember that you cut your face shaving this morning.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

Inmate claims to have AIDS

Your assignment: Making rounds in the cell block.

When you arrive on the scene, you pass by one inmate's cell as the inmate yells out at you that he has AIDS and, if he has to die, he's going to take you with him. He then throws a cup of fluid at you.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

IV drug search in a cell

Your assignment: You are asked to assist in a search of one of the inmates and his cell. He is suspected of having drugs and an IV needle in his possession.

When you arrive on the scene, the inmate is hostile, uses abusive language and pushes you as you move toward him. As you try to handcuff him, he bites you, drawing blood from your hand. Once you subdue him, you pat search him and search his cell.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

IV drug/booking search

Your assignment: Booking incoming suspects into custody at a local corrections facility.

When you are on the scene, you need to conduct a booking search on an incoming female arrested for possession of drugs. She is wearing a jacket with several pockets and is carrying a purse.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

Job injury

Your assignment: Supervision on a job detail in which a group of inmates are involved in cutting sheetmetal that will be used in making signs.

When you are on the scene, an inmate you are supervising cuts himself on the sheet metal and is bleeding profusely. You remember that you cut your hand this weekend doing yard work.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

HIV-infected fellow employee

Your assignment: One of the officers on your shift was out with a bad cold for several weeks. He came back for a week and was out again for 2 months. When he came back this time, he was weak and very thin. He is obviously suffering from a chronic illness. You suspect that he might have HIV infection.

When you are on the scene, you have just been assigned to transport prisoners during the next several weeks. The officer in question is your assigned partner.

Part 1.

1. At the beginning of your shift, what personal protective clothing and equipment should be in your vehicle to protect you from contamination? What items should be on your person? Why?
2. Once you arrive on the scene, what are the contamination risks?
3. How can you use personal protective clothing and equipment to protect yourself from contamination?
4. What can you do to protect yourself from contamination if you do not have all of this clothing or equipment with you? What if you have more people to treat than you have equipment for?

Part 2.

5. Before leaving the scene, what items must be decontaminated and disposed of? What are the correct procedures?
6. What must be decontaminated or disposed of when you return to the workplace? What are the correct procedures?

Part 3.

7. What procedures must be followed at the scene in the event of incidents and exposures? What procedures must be followed immediately upon returning to the workplace? What follow-up actions must be taken after an incident or exposure?

Section 5: Resources

The following resources have been compiled from recommended lists provided by constituency groups interested in this training course. Representatives from the Centers for Disease Control have not reviewed this material, nor will the agency endorse any of the titles listed here, except for those published by the U.S. government.

In preparing for training, you may wish to research some of these resources. If you choose to use one or more in your training, be certain to review the material carefully for accuracy and to make sure the information is relevant to your group.

There are additional resources listed at the end of Section 7.

Section 5: RESOURCES

INFORMATION FOR FIRE FIGHTERS

Print materials

"A 10-Point Approach to Infectious/Contagious Disease Exposure." Captain Decker Williams. International Association of Fire Chiefs Fall 1987.

Advice About AIDS for Public Safety, Health, and Emergency Personnel. (May 1986)
Seattle/King County Department of Public Health, AIDS Prevention Project, 1116 Summit, Seattle, WA 98101. 206-587-4999. Washington Department of Social and Health Services, Office of Disease Prevention and Control, Office on AIDS, Airdustrial Park, Olympia, WA 98504-0095. 206-586-3887. Publication no. DSHS 22-456.

"AIDS and the Emergency Provider." Emergency Medical Services 1988; 17 (Number 3).

"AIDS and Your Job - Are There Risks?" American Red Cross/US Public Health Service, October 1986. (Currently under revision. To be released before July 1, 1989.)

"AIDS - Are First Responders At Risk?" Chief Fire Executive July/August 1987.

AIDS: Information Bulletin for Employees.
Maine Department of Human Services, Division of Disease Control, Bureau of Health, State House Station, ME 04333.

AIDS Precautions for the First Responder. (1987)
Health Education Resource Organization, 100 Maryland Avenue, Suite 240, Rockville, MD 20850. 301-762-3385.

"AIDS: The Challenges Ahead." An American Hospital Association Report. Emergency Medical Services 1988; 17 (Number 3).

"AIDS - What Risk to Save a Life?" Fire Engineering June 1987.

"Blueprint for a Disease-free Station." Decker Williams and Dean Pedrotti. Firehouse February 1988.

"Chapter I: Medical." Facility Safety/Medical National Fire Protection Assn. 1500 Committee Guidelines, 1987 edition.

"Communicable Diseases." Fire Department of New York City - Bureau of Operations June 3, 1988.

"Disease Avoidance on the Job." Dean Pedrotti and Irvine "Decker" Williams. Firehouse September 1987.

Emergency and Public Safety Workers and HIV/AIDS -- A Duty to Respond" American Red Cross. (In progress. To be released before July 1, 1989.)

"Emergency Medical Services and AIDS." Fire Chief November 1987.

"Emergency Workers and the AIDS Epidemic: A Training Model." Marilyn Mitchell and Mike Velasquez. The California Fireman May 1988.

"Employee's Reactions to AIDS in the Workplace." Dr. David M. Herold, Georgia Institute of Technology, Center for Work Performance Problems, February 1988.

"Exposure Reporting and Tracking, and Severity Rating of Infectious Diseases." Irvine "Decker" Williams and Dean Pedrotti. Firehouse June 1988.

"Federal Report Says No Report of AIDS Among Firefighters, Paramedics." Fire Service Labor Monthly August 1987.

"Firefighters Refuse To Help Baby With AIDS." IAFC on Scene March 1988.

Guidelines To Prevent Transmission of Communicable Disease During Emergency Care for Fire Fighters, Paramedics and Emergency Medical Technicians.

International Association of Fire Fighters, 1750 New York Avenue, NW, Washington, DC 20006. 202-737-8484.

"How Has the AIDS Scare Affected EMS?" Emergency Medical Services 1988; 17 (Number 3).

"Infectious Disease Exposure." Dean Pedrotti and Irvine "Decker" Williams. Firehouse August 1987.

Infectious Disease Handbook for Emergency Care Personnel. Katherine H. West, J.B. Lippincott Company, 1987.

Information for Firefighters, Police, Emergency Medical Staff, and Staff of Correctional Institutions. (June 1985)

Rhode Island Department of Health, Division of Disease Control, 75 Davis Street, Providence, RI 02908. 401-277-2362.

"Instructions for the Preparation and Disposition of Form CD-72; Member Injury Report and Form CD-73; Member Exposure Report." Division of Safety: Fire Department of the City of New York. Safety Bulletin No. 7, revised July 1988.

"NAEMT Emergency Management Committee Report on Infection and Infection Control." National Association of Emergency Medical Technicians July 1988.

"Occupational Exposure to Hepatitis B Virus and Human Immunodeficiency Virus (HIV)." Federal Register Friday November 27, 1987; 52 (Number 228).

Recommendations for Preventing the Transmission of Human T-Lymphotropic Virus Type III in the Pre-Hospital Emergency Medical Care Setting. (1986)

Wisconsin Department of Health and Social Services, Division of Health, AIDS/HIV Program, 1 West Wilson Street, P. O. Box 309, Madison, WI 53701-0309. 608-267-5287.

"Two Out for Refusing to Transport AIDS Patient." Fire Chief July 1987.

"Unsuspected Human Immunodeficiency Virus in Critically Ill Emergency Patients." James L. Baker, MD et al. Journal of the American Medical Association 1987; 257 (Number 19).

Victim Tracking Tag, Addendum No. 1, June 6, 1988, Fire Department of the City of New York, 1988.

"Viral Hepatitis Risk in Urban Emergency Medical Services Personnel." Paul E. Pepe, MD, et al. Annals of Emergency Medicine April 4, 1986.

"Worker Exposure to AIDS and Hepatitis B." US Department of Labor/Occupational Safety and Health Administration.

Audiovisuals

AIDS and Your Job - What You Should Know. 1986.

Modern Talking Picture Service, 5000 Park Street North, St. Petersburg, FL 33709.
813-541-5763.

Developed for police officers, firefighters, and paramedics, this video outlines the precautions that can be taken to reduce the risk of exposure to the AIDS virus on the job.

First Responders: Infection Control from Theory to Practice (1988)

Media Library, University of Michigan Medical Campus, R4440 Kresge 1, Box 56, Ann Arbor, MI 48109. 313-763-2074.

The Hidden Danger. 1988.

IAFF, 1750 New York Ave., NW, Washington, DC 20006. 202-737-8484.

This videotape describes hepatitis B and how to protect against it through vaccination. The tape includes an interview with a registered nurse whose father, Jim Condron, was infected with hepatitis B while serving as a fire fighter/paramedic in Norwood, Ohio.

Organizations and clearinghouses

The American Red Cross, National Headquarters, AIDS Education Program, 17th & D Streets, N.W., Washington, D.C. 20006. 202-639-3441.

Education services, training, workshops, seminars, audiovisuals and print material dissemination.

The American Red Cross AIDS Education Program provides HIV/AIDS-related products and education services through the HIV/AIDS coordinators of local Red Cross chapters nationwide and American Red Cross offices on military installations worldwide. Some chapters offer HIV/AIDS workplace education programs, including health care and public safety. Other HIV/AIDS-related services available at some chapters include counseling, alternative testing, and home care. Chapter phone numbers are listed in local phone directories. If there is no local chapter, or information regarding other chapters' services is needed, callers may contact the HIV/AIDS coordinator at one of the Operations Headquarters: Eastern (Alexandria, VA) 703-838-8744; Midwestern (St. Louis, MO) 314-997-9105; Western (Burlingame, CA) 415-692-5201.

International Association of Fire Fighters, 1750 New York Avenue N.W., Washington, D.C. 20006, 202-737-8484

Louisiana State University, AIDS Education and Training Center, 1542 Tulane Ave., New Orleans, LA 70112.

The AIDS Education and Training Center (ETC) program for the States of Louisiana, Arkansas, and Mississippi is supported by the Louisiana State University, Tulane University, the University of Arkansas, and the Mississippi Medical School. Trainees are expected to be physicians, physician assistants, nurses and nurse practitioners, social workers, dental workers, emergency service workers, and human service workers, for a total of about 1400 annually. Fifty percent of health professionals in the ETC activities would represent minority populations. Robert L. Marier, MD, 504-568-3855.

National AIDS Information Clearinghouse, P.O. Box 6003, Rockville, MD 20850, 301-762-5111.

National Safety Council, 444 N. Michigan Ave., Chicago, IL 60611.

Meetings, Conferences, Databases, Electronic Media, Printed Material Dissemination, Audiovisual material Production, Printed Material Production.

The National Safety Council (NSC) is a voluntary nongovernmental organization. It promotes accident reduction by providing a forum for the exchange of safety and health ideas, techniques, and experiences and the discussion of accident prevention methods. NSC has produced several AIDS-related brochures aimed at workers, parents, and teenagers. J. C. Gilcrest, President. 312-527-4800.

Santa Clara County Health Department, AIDS Program, 2220 Moorpark Ave., San Jose, CA 95128

Support Groups, HIV Test Related Counseling, HIV Antibody Testing Services, Home Nursing Care, Training, Workshops, Seminars, Workplace Programs, Hotlines, Referral Services, Physician Referral Services, Epidemiological Data Analysis,

The AIDS Program is intended to decrease the morbidity and mortality caused by HIV infection through education. Health educators and public health nurses with special AIDS training provide training in schools, the workplace, and the health care environment. First responders, persons engaging in high-risk behavior, correctional inmates and the general public are the target audiences. Certain services are available in Spanish. 408-299-4151.

US Department of Labor, Occupational Safety and Health Administration, Internal AIDS Policy, 200 Constitution Ave., NW, Washington, DC 20210.

Education Services, Information Dissemination Services, Policy Analysis, Recommendations.

The Occupational Safety and Health Administration (OSHA) has a program that focuses on enforcement of currently applicable occupational safety and health standards pertaining to health care workers; standards promulgation activities in connection with AIDS, hepatitis B, and other bloodborne diseases; and information and educational activities in coordination with the Department of Health and Human Services. Candace L. Strother, Deputy Assistant Secretary. 202-523-6091.

INFORMATION FOR LAW ENFORCEMENT OFFICERS

Print materials

AIDS: A Guide for Officials and Students of Law Enforcement. (October 1987)
Wyoming Health and Medical Services, STD/AIDS Prevention Program, Hathaway Building,
4th Floor, Cheyenne, WY 82002-0710. 307-777-7953.

AIDS and intravenous drug use. Don Des Jarlais and Dana Huint. US Dept. of Justice, Na-
tional Institute of Justice. February 1988. For free single copies, call 301-251-5500.

"AIDS and the Law Enforcement Officer." by Theodore H. Hammett.
US Dept. of Justice, National Institute of Justice. NCJ 107541. November/December 1987.
For free single copies, call 301-251-5500.

"AIDS and Your Job - Are There Risks?" American Red Cross/US Public Health Service, Oc-
tober 1986. (Currently under revision. To be released before July 1, 1989.)

AIDS from Policy to Practice, Volume 1: Model Policies and Procedures. Anna T. Laslow.
Alexandria, VA: National Sheriffs Association. 1989 (forthcoming). 800-424-7827.

AIDS in Correctional Facilities: Issues and Options, by Theodore H. Hammett. Third edition.
US Dept. of Justice, National Institute of Justice. NCJ 109943. April 1988. For free single
copies, call 301-251-5500.

"AIDS In the Workplace: Confronting the Challenge." Hotel/Motel Security and Safety
Management March 1988.

AIDS: Information Bulletin for Employees. Maine Department of Human Services, Division
of Disease Control, Bureau of Health, State House Station, ME 04333.

AIDS Precautions for the First Responder. (1987)
Health Education Resource Organization, 100 Maryland Avenue, Suite 240, Rockville, MD
20850. 301-762-3385.

The cause, transmission, and incidence of AIDS. Theodore H. Hammett, Harold Jaffe, and
Bruce Johnson.
US Dept. Of Justice, National Institute of Justice. NCJ 106678. June 1987. For free single
copies, call 301-251-5500.

"Employee's Reactions to AIDS in the Workplace." Dr. David M. Herold, Georgia Institute of
Technology, Center for Work Performance Problems, February 1988.

Facts on AIDS: A Law Enforcement Guide.
New Jersey Department of Health, AIDS Prevention/Education Unit, John Fitch Plaza, CN
360, Trenton, NJ 08625-0360. 609-633-2751.

HIV antibody testing: procedures, interpretation, and reliability of results. Theodore H. Ham-
mett.
US Dept. of Justice, National Institute of Justice. October 1988. For free single copies, call
301-251-5500.

**Information for Firefighters, Police, Emergency Medical Staff, and Staff of Correctional In-
stitutions.** (June 1985)
Rhode Island Department of Health, Division of Disease Control, 75 Davis Street, Providence,

RI 02908. 401-277-2362.

"Occupational Exposure to Hepatitis B Virus and Human Immunodeficiency Virus (HIV)." Federal Register Friday November 27, 1987; 52 (Number 228).

One Hundred Questions and Answers about AIDS. Alexandria, VA. National Sheriffs Association. 1987. (English and Spanish) \$1.50/copy, 800-424-7827.

Precautionary measures and protective equipment: Developing a reasonable response. Theodore M. Hammett.

US Dept. of Justice, National Institute of Justice. NCJ 108619. February 1988. For free single copies, call 301-251-5500.

Risk of Infection with the AIDS virus through exposures to blood. Theodore H. Hammett and Walter Bond.

US Dept. of Justice, National Institute of Justice. October 1987. For free single copies, call 301-251-5500.

"Worker Exposure to AIDS and Hepatitis B." US Department of Labor/Occupational Safety and Health Administration.

Audiovisuals

AIDS and Your Job - What You Should Know. 1986.

Modern Talking Picture Service, 5000 Park Street North, St. Petersburg, FL 33709. 813-541-5763.

Developed for police officers, firefighters, and paramedics, this video outlines the precautions that can be taken to reduce the risk of exposure to the AIDS virus on the job.

AIDS Videotape. 1985.

University of British Columbia, AV-TV Media Library, Instructional Resources Center, Vancouver, BC, Canada V6T1 W5. 604-228-3467.

First Responders: Infection Control from Theory to Practice (1988)

Media Library, University of Michigan Medical Campus, R4440 Kresge 1, Box 56, Ann Arbor, MI 48109. 313-763-2074.

On Guard: Infection Control for Safety and Health-Care Professionals. (videotape), 1988. Jem Bookstore, P. O. Box 1026, Solana Beach, CA 92075. 619-481-1128.

Organizations and clearinghouses

American Correctional Association, Training Division, 4321 Hartwick Rd., Suite L-208, College Park, MD 20740.

Meetings, Conferences, Training, Workshops, Seminars. 301-699-7600.

American Correctional Health Services Association, 5530 Wisconsin Ave., NW, Ste. 1149, Washington, DC 20815. 301-652-1172. Education Services.

American Red Cross, National Headquarters, AIDS Education Program, 17th & D Streets, N.W., Washington, D. C. 20006. 202-639-3441.

Education Services, Training, Workshops, Seminars, Audiovisuals and Print Material

The American Red Cross AIDS Education Program provides HIV/AIDS-related products and education services through the HIV/AIDS coordinators of local American Red Cross chapters nationwide and American Red Cross offices on military installations worldwide. Some chapters offer HIV/AIDS workplace education programs, including health care and public safety. Other HIV/AIDS-related services available at some chapters include counseling, alternative testing, and home care. Chapter phone numbers are listed in local phone directories. If there is no local chapter, or information regarding other chapters' services is needed, callers may contact the HIV/AIDS coordinator at one of the Operations Headquarters: Eastern (Alexandria, VA) 703-838-8744; Midwestern (St. Louis, MO) 314-997-9105; Western (Burlingame, CA) 415-692-5201.

Comprehensive AIDS Program of Palm Beach County, HIV/AIDS Services Demonstration Project, P.O. Box 3084, Lantana, FL 33465-3084.

Case Management, Administration Services, Counseling Services, Crisis Intervention Counseling, Support Groups, Medical Services, Home Nursing Care, Companions, Buddies to AIDS Patients, Financial Services to Individuals, Outreach Education Services, Training, Workshops, Seminars, Information Dissemination Services, Physician Referral Services, Information Production Services.

The Program provides mobilization of resources, advocacy, and educational programs for businesses, health professionals, law enforcement personnel, municipalities, schools, religious organizations, and the public. Shauna Dunn, Project Director. 407-582-4357.

Eugene and Agnes E. Meyer Foundation, 1200 15th St., NW, Ste. 500, Washington, DC 20005.
Donations, Grants, Donors.

The Foundation assists in the development of community services and facilities in metropolitan Washington, DC. Grants are principally for welfare, education, health and mental health, the arts and humanities, law and justice, preferably to provide new or improved services rather than to support existing programs. 202-659-2435.

Federal Bureau of Investigation, Forensic Training Unit, 10th & Pennsylvania Ave., NW, Washington, DC 20533.

Speakers Bureaus, Information Dissemination Services, Epidemiological Research.

The Forensic Laboratory Safety project provides educational materials and/or speakers to Forensic Laboratory personnel, as well as Federal, state and local law enforcement agencies throughout the US. It has developed a technique for using gamma and X-ray irradiation to inactivate HIV in liquid body fluid specimens submitted to forensic laboratories for examination

and analysis. Several booklets are available, as is a resource person to all US law enforcement agencies and forensic laboratories, clinical laboratories, pathologists and personnel in other medical areas, and in select instances, the public. Federal Bureau of Investigation Academy, Quantico, VA 22135. John D. Bigbee, Special Agent. 703-640-6131.

Forensic AIDS Project, 798 Brannan St., San Francisco, CA 94103.

Extended Counseling, Therapy, Substance Abuse Counseling, HIV Test Related Counseling, Education Services, Outreach Education Services.

The Project, a program of the San Francisco Department of Health and Social Services, serves the inmate population of San Francisco County and all first responders. Follow up programs for prison inmate populations and emergency first responders are also provided. Ralle Greenberg, LCSW, Program Director. Eugene Jackson, Office Manager. 415-863-8237.

Georgia Department of Human Resources, Division of Public Health, Community Health Section, 878 Peachtree St., NE, Ste. 102, Atlanta, GA 30309.

HIV Test Related Counseling, HIV Antibody Testing Services, Education Services, Outreach Education Services, Training, Workshops, Seminars, Hotlines, Referral Services, Epidemiological Research.

The AIDS Unit in the Office of Infectious Disease provides planning, surveillance, special studies and laboratory, medical, health education and training, and clinical services. A program to identify, educate and test high risk women has been implemented. A street team conducts educational outreach programs to IV drug users (STARR). Minority outreach programs operate through a coordinated effort between the State AIDS Program and Morehouse School of Medicine. A Public Information Program disseminates information about the AIDS projects and related activities. The State has developed a confidential list of physicians in each health district who do medical and/or psychological evaluation of HIV positive patients. Surveillance programs include seroprevalence studies on STD clinic clients, methadone center patients, HIV positive reports, data for court ordered testing, confirming diagnosed or suspected case of AIDS. Surveillance staff provide education, technical assistance, and consultation to physicians, hospital staff, and infection control nurses in order to ensure that AIDS cases are properly reported. Phil Kaufman, Public Information Officer. 404-894-4282. Office of Infectious Disease: Jane Carr, Director, State AIDS Program Coordinator. 404-894-6428. Kathy Bush, Deputy Director. Joseph Wilber, MD, Medical Director. Bill Boyd, Sexually Transmitted Diseases. 404-894-4405. Minority Outreach: Shaunette Crawford, Coordinator.

National Safety Council, 444 N. Michigan Ave., Chicago, IL 60611.

Meetings, Conferences, Databases, Electronic Media, Printed Material Dissemination, Audiovisual Material Production, Printed Material Production.

The National Safety Council (NSC) is a voluntary nongovernmental organization. It promotes accident reduction by providing a forum for the exchange of safety and health ideas, techniques, and experiences and the discussion of accident prevention methods. NSC has produced several AIDS-related brochures aimed at workers, parents, and teenagers. J. C. Gilchrest, President. 312-527-4800.

National Sheriffs' Association, 1450 Duke St., Alexandria, VA 22314.

Education Services, Audiovisual Material Production, Book, Monograph, Pamphlet Production, Policy Analysis.

The AIDS Project of the National Sheriffs' Association developed a textbook for correctional officials on AIDS information and management within the criminal justice system. The Association has also developed videorecordings in English and Spanish. A model HIV policy and training curriculum is being developed for use by the justice community and for drug and alcohol abuse treatment providers. (forthcoming Summer, 1989). Anna T. Laszlo, Director. 703-836-7827, 800-424-7827.

South Jersey AIDS Alliance, 1616 Pacific Ave., Ste. 201, Atlantic City, NJ 08401.

Practical Support Services, Companions, Buddies to AIDS Patients, Financial Services to Individuals, Training, Workshops, Seminars, Hotlines, Referral Services.

The South Jersey AIDS Alliance serving Atlantic, Cape May, Salem, Ocean, Cumberland, Gloucester, Camden, and Burlington counties is a volunteer organization with a professional staff. Its money is used for the Spanish and English hotlines, PSA's (Public Service Announcements), an information center and risk reduction efforts (condom distribution). In-service training is offered to hospitals, schools, churches, and law enforcement officials. Michelle Brunetti, Coordinator. 609-347-8799.

US Department of Justice, 10th & Constitution Ave., NW, Rm. 1612, Washington, DC 20530.

Meetings, Conferences, Speakers Bureaus, Training, Workshops, Seminars, Newsletter, Periodical Production.

The Law Enforcement Coordinating Committees (LECC's) are coalitions of Federal, State, and local law enforcement agencies, chaired by US Attorneys in each of the 94 judicial districts. Groups meet to hear speakers and receive written materials about the risk to law enforcement personnel who are in contact with those in high-risk categories. The LECC Victim-Witness Staff in the Executive Office for US Attorneys provides technical assistance to LECC's who wish to present a training program of this kind. Assistance includes acting as a liaison between the Federal and State/local AIDS service providers; finding speakers on the topic; and finding available resource materials. Virginia I. Bell, Attorney. 202-633-4024.

US Department of Justice, National Institute of Justice, AIDS Program, 633 Indiana Ave., NW., Washington, DC 20531.

Training, Workshops, Seminars, Information Dissemination Services, Research, Policy Analysis, Recommendations.

Since 1985, the National Institute of Justice (NIJ) has worked closely with the Centers for Disease Control and other organizations to provide accurate information on AIDS to criminal justice professionals. Reports have been published on AIDS for law enforcement, corrections, and new probation and parole professionals. In 1987, the NIJ AIDS Clearinghouse was established as an information and dissemination service for criminal justice professionals. NIJ also sponsors AIDS-related research and development, which currently includes studies on the incidence of AIDS in prison, policy and procedures development, and relationships between

AIDS and crime. Cheryl Crawford, AIDS Program Manager. 202-272-6010.

US Department of Justice, National Institute of Justice, National Criminal Justice Reference Service, National Institute of Justice AIDS Clearinghouse, P. O. Box 6000, Rockville, MD 20850.

Databases, Electronic Media, Library Services, Printed Material Production.

The National Institute of Justice (NIJ) AIDS Clearinghouse serves as an international centralized source for criminal justice practitioners to direct their questions about AIDS as it impacts their daily responsibilities. An information specialist is available to answer questions, make referrals, and suggest publications. The Clearinghouse also offers a public reading room, inter-library loans, microfiche and database searches. Information resources also include: NIJ Reports (bimonthly publication); AIDS Bulletin Series; AIDS in Correctional Facilities: Issues and Options (updated annually); AIDS and the Law Enforcement Officer: Concerns and Policy Responses; and AIDS in Probation and Parole (pre-publication). In addition to the NIJ's publications, the Clearinghouse has access to information developed by the Centers for Disease Control and other agencies of the US Public Health Service, and the Department of Justice, as well as materials prepared by professional associations, State and local governments, and corrections and law enforcement agencies. The Clearinghouse accepts telephone, written, and on-site inquiries about resources. While the primary audience is criminal justice practitioners, there are no user restrictions. With the exception of postage and handling fees for bulk order of publications, there are no fees associated with the services of the Clearinghouse. Cheryl A. Bissell, AIDS Information Specialist. 301-251-5500.

US Department of Justice, Office of Justice Programs, Bureau of Justice Assistance, Drug/Abuse Information Systems Branch, Criminal Justice Management of High Risk Population, 633 Indiana Ave., NW, Rm. 600J, Washington, DC 20531.

Educational Services, Training, Workshops, Seminars, Policy Analysis, Recommendations.

This national project is designed to equip local and State criminal justice officials with the necessary knowledge and management skills to develop and implement policies and procedures for offenders in high-risk groups suspected of, or diagnosed with, AIDS. This 18-month project with the National Sheriffs' Association will develop model policies and corresponding training curricula. In addition, at least four regional training sessions will be held, a newsletter will be prepared, and appropriate articles will be submitted for publication. This project will reach a wide range of criminal justice personnel, law enforcement, pretrial services, corrections, probation, parole, victim services, and drug and alcohol treatment providers. Jody Forman, Program Manager. 202-272-4601 or Anna T. Laszlo, National Sheriffs' Assn. 800-424-7827.

US Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention, 633 Indiana Ave., NW, Washington, DC 20531.

Meetings, Conferences, Training, Workshops, Seminars, Information Dissemination Services. The Office of Justice Programs provides juvenile correctional and detention administrators with information pertaining to AIDS, including how to conduct workshops and conferences; how to develop manuals, brochures, and posters; and how to develop referrals and resources information. 202-724-5940.

US Department of Labor, Occupational Safety and Health Administration, Internal AIDS Policy, 200 Constitution Ave., NW, Washington, DC 20210.

Education Services, Information Dissemination Services, Policy Analysis, Recommendations.

The Occupational Safety and Health Administration (OSHA) has a program that focuses on enforcement of currently applicable occupational safety and health standards pertaining to health care workers; standards promulgation activities in connection with AIDS, hepatitis B, and other bloodborne diseases; and information and educational activities in coordination with the Department of Health and Human Services. Candace L. Strother, Deputy Assistant Secretary. 202-523-6091.

Washoe County District Health Department, 1001 E. 9th St., Reno, NV 89520.

HIV Test Related Counseling, HIV Antibody Testing Services, Home Nursing Care, Speakers Bureaus, Hotlines, Referral Services.

Wende Pappas, RN, Assistant Division Director. 702-328-2478. Ellen Marston, RN, Communicable Disease Investigator. 702-328-2475. Marge Mortensen, RN, CHN, Visiting Nursing Services. 702-328-2446.

INFORMATION FOR EMERGENCY MEDICAL TECHNICIANS & PARAMEDICS

Print materials

"A 10-Point Approach to Infectious/Contagious Disease Exposure." Captain Decker Williams. International Association of Fire Chiefs Fall 1987.

Advice About AIDS for Public Safety, Health, and Emergency Personnel. (May 1986)
Seattle/King County Department of Public Health, AIDS Prevention Project, 1116 Summit, Seattle, WA 98101. 206-587-4999. Washington Department of Social and Health Services, Office of Disease Prevention and Control, Office on AIDS, Airdustrial Park, Olympia, WA 98504-0095. 206-586-3887. Publication no. DSHS 22-456.

"AIDS and the Emergency Provider." Emergency Medical Services 1988; 17 (Number 3).

"AIDS and Your Job - Are There Risks?" American Red Cross/US Public Health Service, October 1986.

The AIDS Answer Book: Facts on AIDS, Hepatitis B and Infection Control Techniques. (1988)
Jems Publishing Company, Incorporated, P.O. Box 1026, Solana Beach, CA 92075. 619-481-1128.

"AIDS - Are First Responders At Risk?" Chief Fire Executive July/August 1987.

AIDS: Information Bulletin for Employees.

Maine Department of Human Services, Division of Disease Control, Bureau of Health, State House Station, ME 04333.

"AIDS - Precautions for Health-Care Workers and Allied Professionals." AIDS Recommendations and Guidelines, Centers for Disease Control, September 2, 1983.

AIDS Precautions for the First Responder. (1987)

Health Education Resource Organization, 100 Maryland Avenue, Suite 240, Rockville, MD 20850. 301-762-3385.

"AIDS - What Risk to Save a Life?" Fire Engineering June 1987.

"AIDS: The Challenges Ahead." An American Hospital Association Report. Emergency Medical Services 1988; 17 (Number 3).

"Blueprint for a Disease-free Station." Decker Williams and Dean Pedrotti. Firehouse February 1988.

"Chapter I: Medical." Facility Safety/Medical National Fire Protection Assn. 1500 Committee Guidelines, 1987 edition.

"Communicable Diseases." Fire Department of New York City - Bureau of Operations June 3, 1988.

"Disease Avoidance on the Job." Dean Pedrotti and Irvine "Decker" Williams. Firehouse September 1987.

"Emergency Medical Services and AIDS." Fire Chief November 1987.

"Emergency Workers and the AIDS Epidemic: A Training Model." Marilyn Mitchell and Mike Velasquez. *The California Fireman* May 1988.

"Employee's Reactions to AIDS in the Workplace." Dr. David M. Herold, Georgia Institute of Technology, Center for Work Performance Problems, February 1988.

"Exposure Reporting and Tracking, and Severity Rating of Infectious Diseases." Irvine "Decker" Williams and Dean Pedrotti. *Firehouse* June 1988.

"Federal Report Says No Report of AIDS Among Firefighters, Paramedics." *Fire Service Labor Monthly* August 1987.

"Firefighters Refuse To Help Baby With AIDS." *IAFC on Scene* March 1988.

Guidelines To Prevent Transmission of Communicable Disease During Emergency Care for Fire Fighters, Paramedics and Emergency Medical Technicians.
International Association of Fire Fighters, 1750 New York Avenue, NW, Washington, DC 20006. 202-737-8484.

House of Representatives Bill No. 3418: To Establish Certain Grant Programs, Requirements and Prohibitions for the Purpose of Protecting Emergency Response Employees from Infectious Diseases, including AIDS.

"How Has the AIDS Scare Affected EMS?" *Emergency Medical Services* 1988; 17 (Number 3).

Infection Control for Ambulance Personnel. (September 1987)

New Jersey Department of Health, AIDS Prevention/Education Unit, John Fitch Plaza, CN 360, Trenton, NJ 08625-0360. 609-633-2751.

"Infectious Disease Exposure." Dean Pedrotti and Irvine "Decker" Williams. *Firehouse* August 1987.

Infectious Disease Handbook for Emergency Care Personnel. Katherine H. West, J.B. Lippincott Company, 1987.

Information for Firefighters, Police, Emergency Medical Staff, and Staff of Correctional Institutions. (June 1985)
Rhode Island Department of Health, Division of Disease Control, 75 Davis Street, Providence, RI 02908. 401-277-2362.

"Instructions for the Preparation and Disposition of Form CD-72; Member Injury Report and Form CD-73; Member Exposure Report." Division of Safety: Fire Department of the City of New York. *Safety Bulletin* No. 7, revised July 1988.

"NAEMT Emergency Management Committee Report on Infection and Infection Control." National Association of Emergency Medical Technicians July 1988.

"Occupational Exposure to Hepatitis B Virus and Human Immunodeficiency Virus (HIV)." *Federal Register* Friday November 27, 1987; 52 (Number 228).

Recommendations for Preventing the Transmission of Human T-Lymphotropic Virus Type III in the Pre-Hospital Emergency Medical Care Setting. (1986)
Wisconsin Department of Health and Social Services, Division of Health, AIDS/HIV Program, 1 West Wilson Street, P. O. Box 309, Madison, WI 53701-0309. 608-267-5287.

"Two Out for Refusing to Transport AIDS Patient." Fire Chief July 1987.

"Unsuspected Human Immunodeficiency Virus in Critically Ill Emergency Patients." James L. Baker, MD et al. Journal of the American Medical Association 1987; 257 (Number 19).

"Viral Hepatitis Risk in Urban Emergency Medical Services Personnel." Paul E. Pepe, MD, et al. Annals of Emergency Medicine April 4, 1986.

"Worker Exposure to AIDS and Hepatitis B." US Department of Labor/Occupational Safety and Health Administration.

Victim Tracking Tag, Addendum No. 1, June 6, 1988, Fire Department of the City of New York, 1988.

Audiovisuals

AIDS and Your Job - What You Should Know. 1986.

Modern Talking Picture Service, 5000 Park Street North, St. Petersburg, FL 33709. 813-541-5763.

First Responders: Infection Control from Theory to Practice (1988)

Media Library, University of Michigan Medical Campus, R4440 Kresge 1, Box 56, Ann Arbor, MI 48109. 313-763-2074.

On Guard: Infection Control for Safety and Health-Care Professionals. (videotape), 1988.

Jem Bookstore, P. O. Box 1026, Solana Beach, CA 92075. 619-481-1128.

Organizations and clearinghouses

American Ambulance Association, 1888 K St., NW, Ste. 1105, Washington, DC 20006.

Education Services nationwide. 202-887-5144.

The American Red Cross, National Headquarters, AIDS Education Program, 17th & D Streets, N.W., Washington, D.C. 20006. 202-639-3441.

Education services, training, workshops, seminars, audiovisuals and print material dissemination.

The American Red Cross AIDS Education Program provides HIV/AIDS-related products and education services through the HIV/AIDS coordinators of local Red Cross chapters nationwide and American Red Cross offices on military installations worldwide. Some chapters offer HIV/AIDS workplace education programs, including health care and public safety. Other HIV/AIDS-related services available at some chapters include counseling, alternative testing, and home care. Chapter phone numbers are listed in local phone directories. If there is no local chapter, or information regarding other chapters' services is needed, callers may contact the HIV/AIDS coordinator at one of the Operations Headquarters: Eastern (Alexandria, VA)

703-838-8744; Midwestern (St. Louis, MO) 314-997-9105; Western (Burlingame, CA) 415-692-5201.

Louisiana State University, AIDS Education and Training Center, 1542 Tulane Ave., New Orleans, LA 70112.

Training, Workshops, Seminars.

The AIDS Education and Training Center (ETC) program for the States of Louisiana, Arkansas, and Mississippi is supported by the Louisiana State University, Tulane University, the University of Arkansas, and the Mississippi Medical School. Trainees are expected to be physicians, physician assistants, nurses and nurse practitioners, social workers, dental workers, emergency service workers, and human service workers, for a total of about 1400 annually. Fifty percent of health professionals in the ETC activities would represent minority populations. Robert L. Marier, MD. 504-568-3855.

Philadelphia County Medical Society, 2100 Spring Garden St., Philadelphia, PA 19130.

Education Services, Training, Workshops, Seminars, Book, Monograph, Pamphlet Dissemination, Physician Referral Services. John F. X. Trevi, Executive Director, 215-563-5343.

Santa Clara County Health Department, AIDS Program, 2220 Moorpark Ave., San Jose, CA 95128

Support Groups, HIV Test Related Counseling HIV Antibody Testing Services, Home Nursing Care, Training, Workshops, Seminars, Workplace Programs, Hotlines, Referral Services, Physician Referral Services, Epidemiological Data Analysis.

The AIDS Program is intended to decrease the morbidity and mortality caused by HIV infection through education. Health educators and public health nurses with special AIDS training provide training programs in schools, the workplace, and the health care environment. First responders, groups at risk, correctional inmates and the general public are the target audiences. Certain services are available in Spanish. 408-299-4151.

US Department of Labor, Occupational Safety and Health Administration, Internal AIDS Policy, 200 Constitution Ave., NW, Washington, DC 20210.

Education Services, Information Dissemination Services, Policy Analysis, Recommendations.

The Occupational Safety and Health Administration (OSHA) has a program that focuses on enforcement of currently applicable occupational safety and health standards pertaining to health care workers; standards promulgation activities in connection with AIDS, hepatitis B, and other bloodborne diseases; and information and educational activities in coordination with the Department of Health and Human Services. Candace L. Strother, Deputy Assistant Secretary. 202-523-6091.

INFORMATION FOR CORRECTIONS PERSONNEL

Print materials

AIDS and the Law Enforcement Officer. Theodore H. Hammett.
US Dept. of Justice, National Institute of Justice. NCJ 107541. November/December 1987.
For free single copies, call 301-251-5500.

AIDS and intravenous drug use. Don Des Jarlais and Dana Hunt.
US Dept. of Justice, National Institute of Justice. February 1988. For free single copies, call 301-251-5500.

"AIDS and Your Job - Are There Risks?" American Red Cross/US Public Health Service, October 1986. Currently under revision. To be released before July 1, 1989.)

AIDS: From Policy to Practice, Vol. 1: Model Policies and Procedures. A. T. Laszlow. Alexandria, VA: National Sheriffs' Assn. (forthcoming) 1989. Call 800-424-7827.

AIDS: From Policy to Practice: The Trainer's Manual. A. T. Laszlow. Alexandria, VA: National Sheriffs' Assn. (forthcoming) 1989. Call 800-424-7827.

AIDS: Improving the Response of the Correctional System. A.T. Laszlow and M.B. Ayres. Alexandria, VA: National Sheriffs' Assn. 1986. 2nd Edition Spring 1989. \$10/copy. Call 800-424-7827.

AIDS in Correctional Facilities: Issues and Options, by Theodore M. Hammett. Third Edition. US Dept. of Justice, National Institute of Justice. NCJ 109943. April 1988. For free single copies, call 301-251-5500.

AIDS: Information Bulletin for Employees.
Maine Department of Human Services, Division of Disease Control, Bureau of Health, State House Station, ME 04333.

The cause, transmission, and incidence of AIDS. Theodore H. Hammett, Harold Jaffe, and Bruce Johnson.
US Dept. Of Justice, National Institute of Justice. NCJ 106678. June 1987. For free single copies, call 301-251-5500.

Emergency and Public Safety Workers and HIV/AIDS – A Duty to Respond. American Red Cross. (In progress. To be released before July 1, 1989.)

"Employee's Reactions to AIDS in the Workplace." Dr. David M. Herold, Georgia Institute of Technology, Center for Work Performance Problems, February 1988.

HIV antibody testing: procedures, interpretation, and reliability of results. Theodore H. Hammett. US Dept. of Justice, National Institute of Justice. October 1988. For free single copies, call 301-251-5500.

Information for Firefighters, Police, Emergency Medical Staff, and Staff of Correctional Institutions. June 1985. Rhode Island Department of Health, Division of Disease Control, 75 Davis Street, Providence, RI 02908. 401-277-2362.

"Occupational Exposure to Hepatitis B Virus and Human Immunodeficiency Virus (HIV)." Federal Register Friday November 27, 1987; 52 (Number 228).

Oregon Department of Corrections Response to HIV Infection and Acquired Immunodeficiency (AIDS) in State Correctional Settings. 1988.

Oregon Department of Corrections, 2575 Center Street, NE, Salem OR 97310. 503-378-2467.

Precautionary measures and protective equipment: Developing a reasonable response. Theodore M. Hammett.

US Dept. of Justice, National Institute of Justice. NCJ 108619. February 1988. For free single copies, call 301-251-5500.

Risk of Infection with the AIDS virus through exposures to blood. Theodore H. Hammett and Walter Bond.

US Dept. of Justice, National Institute of Justice. October 1987. For free single copies, call 301-251-5500.

"Worker Exposure to AIDS and Hepatitis B." US Department of Labor/Occupational Safety and Health Administration.

100 Questions and Answers about AIDS. Alexandria, VA: National Sheriffs' Assn. 1987. (also available in Spanish). \$1.50/copy. Call 800-424-7827.

Audiovisuals

AIDS: A Bad Way to Die. (videotape, 45 min.) 1987.

For inmates. Free with blank cassette. Charles Hernandez, Supt., Taconic Correctional Institution, Short Hills, NY.

AIDS: The Challenge for Corrections. (17 min.) 1987

National Sheriffs' Assn., 1450 Duke St., Alexandria, VA 22314. 800-424-7827.

AIDS Videotape. 1985.

University of British Columbia, AV-TV Media Library, Instructional Resources Center, Vancouver, BC, Canada V6T1 W5. 604-228-3467.

First Responders: Infection Control from Theory to Practice (1988)

Media Library, University of Michigan Medical Campus, R4440 Kresge 1, Box 56, Ann Arbor, MI 48109. 313-763-2074.

On Guard: Infection Control for Safety and Health-Care Professionals. (videotape), 1988.

Jem Bookstore, P. O. Box 1026, Solana Beach, CA 92075. 619-481-1128.

Preventing AIDS: It's a Matter of Life or Death. (15 min.) 1987.

For inmates, also available in Spanish. National Sheriffs' Assn., 1450 Duke St., Alexandria, VA 22314. 800-424-7827.

Organizations and Clearinghouses

American Correctional Health Services Association, 5530 Wisconsin Ave., NW, Ste. 1149, Washington, DC 20815. 301-652-1172.

Education Services.

The American Red Cross, National Headquarters, AIDS Education Program, 17th & D Streets, N.W., Washington, D.C. 20006. 202-639-3441.

Education services, training, workshops, seminars, audiovisuals and print material dissemination.

The American Red Cross AIDS Education Program provides HIV/AIDS-related products and education services through the HIV/AIDS coordinators of local Red Cross chapters nationwide and American Red Cross offices on military installations worldwide. Some chapters offer HIV/AIDS workplace education programs, including health care and public safety. Other HIV/AIDS-related services available at some chapters include counseling, alternative testing, and home care. Chapter phone numbers are listed in local phone directories. If there is no local chapter, or information regarding other chapters' services is needed, callers may contact the HIV/AIDS coordinator at one of the Operations Headquarters: Eastern (Alexandria, VA) 703-838-8744; Midwestern (St. Louis, MO) 314-997-9105; Western (Burlingame, CA) 415-692-5201.

National Sheriffs' Association, 800-424-7827; in VA, 703-836-7827.

GENERAL INFORMATION ON HIV, HBV, & AIDS

"AIDS and Intravenous Drug Use." Don Des Jarlais and Dana E. Hunt. US Dept. of Justice, National Institute of Justice. NCJ 108620. February 1988.

For free single copies, call 301-251-5500.

"AIDS." World Book Encyclopedia, 1987 edition; 1:52-53.

The AIDS Book: Information for Workers, 2nd Edition. (1987) Service Employees International Union, AFL-CIO, CLC, 1313 L Street, NW, Washington, DC 20005. 202-898-3200. San Francisco AIDS Foundation, 333 Valencia Street, 4th Floor, P. O. Box 6182, San Francisco, CA 94101-6182. 415- 861-3397.

This manual for union field representatives, stewards, and others, provides education and information on AIDS to employees. It begins with a series of questions and answers covering information on workers' rights, screening, high-risk groups, and precautions. It then discusses what unions can do to address AIDS in the workplace, including model contract language for infection control programs. Occupation-specific precautions for preventing exposure to AIDS in the workplace are presented. Occupations covered include nurses, technicians, and aides; health care workers; laboratory workers; cleaning, housekeeping, and custodial staff; laundry and food service workers; incinerator attendants; central sterilization and supply staff; morgue attendants; police and firefighters; correctional staff and mental health institution workers; ambulance workers; sewage workers; mortuary attendants and cemetery workers; and teachers and teaching assistants. An appendix lists disinfectants effective in killing the AIDS virus. Reprints of several Morbidity and Mortality Weekly Reports articles are also included.

"Casual Contact at the Worksite Shows No Link to AIDS Virus." Occupational Health and Safety News Digest March 1987; 3 (Number 3).

"Confronting AIDS: Directions for Public Health Care and Research." National Academy of Sciences, Institute of Medicine, National Academy Press, October 1986.

"Facts About AIDS." US Dept. of Health and Human Services, Public Health Service, Centers for Disease Control, Spring 1987.

"Human Immunodeficiency Virus Infection in the United States: A Review of Current Knowledge." Morbidity and Mortality Weekly Report Centers for Disease Control, December 18, 1987; 36 (Number S-6).

"Information and Procedural Guidelines for Providing Services to Persons With AIDS/HIV." February 1987. Montana Department of Health and Environmental Sciences, Cogswell Building, Helena, MT 59260. 406-444-4740.

This guide presents basic information on AIDS and its transmission, and procedural guidelines for disinfection, protection of staff and patients, and dealing with soiled items and spills of body fluids and blood in facilities with AIDS patients or clients. Specific guidelines are also given for home health care, prehospital emergency care, morticians, optometrists, and providers of prenatal care and dialysis, as well as invasive procedures. Additionally, recommendations are outlined for public accommodations, institutions, swimming pool and custodial and correctional care. Schools and day care facilities are given instructions on attendance, general precautions, personal contact with students and employees with AIDS, and other workplace concerns. Reporting requirements, confidentiality, resources for further information and HIV antibody test sites are listed. Appendixes present definitions for national and provisional-case reporting

of AIDS in children, and other materials.

"Prevention and Control of AIDS." Report of the Board of Trustees, American Medical Association, June 1987.

"Recommendations for Prevention of HIV Transmission in Health Care Settings." Morbidity and Mortality Weekly Report, Centers for Disease Control August 21, 1987; 36 (Number 2S).

"Risk of Infection with the AIDS Virus through Exposures to Blood." Theodore M. Hammett and Walter Bond. US Dept. of Justice, National Institute of Justice. NCJ 107538. October 1987. For free single copies, call 301-251-5500.

"Strategies for Dealing With AIDS in the Workplace." Robert E. Stein. The Arbitration Journal September 1987; 42 (Number 3).

"The Cause, Transmission, and Incidence of AIDS." Theodore M. Hammett, Harold Jaffe, and Bruce Johnson. US Dept. of Justice, National Institute of Justice. NCJ 106678. June 1987. For free single copies, call 301-251-5500.

"Update on Hepatitis B Prevention." Morbidity and Mortality Weekly Report, Centers for Disease Control, June 19, 1987; 36 (Number 23).

"Update: Acquired Immunodeficiency Syndrome and Human Immunodeficiency Virus Infection Among Health-Care Workers." Morbidity and Mortality Weekly Report Centers for Disease Control April 22, 1988; 37 (Number 15).

"Update: Universal Precautions for Prevention of Transmission of Human Immunodeficiency Virus, Hepatitis B Virus, and Other Bloodborne Pathogens in Health-Care Settings." Morbidity and Mortality Weekly Report, Centers for Disease Control, June 24, 1988; 37 (Number 24).

"Worker Exposure to AIDS and Hepatitis B." US Department of Labor/Occupational Safety and Health Administration.

Be Informed About AIDS: Information for Health-Care Personnel and Other Care Providers. (1987)

Channing L. Bete Company, Incorporated, 200 State Road, South Deerfield, MA 01373. 413-665-7611.

Coolfont Report: "A PHS Plan for Prevention and Control of AIDS & the AIDS Virus." Public Health Reports July-August 1986; 101 (Number 4).

Indiana AIDS Prevention (1987)

Indiana State Board of Health, Bureau of Disease Intervention, Division of Acquired Disease, AIDS Program, 1330 West Michigan Street, P. O. Box 1964, Indianapolis, IN 46206. 317-633-0851.

This report is a discussion of the epidemiology of AIDS in Indiana and a coordinated approach to dealing with the AIDS problem. Members of the Indiana AIDS Advisory Committee are named along with telephone numbers and addresses. An overview of the Indiana State Board of Health (ISBH) AIDS Education Program is presented and a summary of the ISBH response to the educational need is included. Special target groups for education include members of high-risk groups, such as dental health personnel, nurses, ancillary health care workers, and emergency medical services personnel. Others include school personnel, correctional systems personnel, Blacks and other minority groups. Policy development is discussed, including the

reporting of AIDS, field services, treatment services, reduction of high-risk behavior, research, foundation support, AIDS and mental health, and cooperative agreements. Other attachments are also provided.

Northern Kentucky AIDS Task Force, 401 Park Ave., Newport, KY 41071.

HIV Test Related Counseling, HIV Antibody Testing Services, Homemakers, Home Health Aides, Education Services.

The AIDS Task Force gathers and disseminates information pertaining to AIDS. Members from the community represent many health fields. HIV testing and counseling is available. Daniel French, MD, Chairman AIDS. 606-344-3800. Julane Doll, RN. 606-291-0770.

Preventing AIDS: A Practical Guide for Everyone. 1987. JALSCO, Incorporated, P. O. Box 30226, Cincinnati, OH 45230. ISBN 0-9617818-0-7.

This booklet provides an overview of AIDS etiology, transmission, risk factors, symptoms, and prevention. General preventive measures for reducing the risk of human immunodeficiency virus infection are presented. Recommendations for specific populations also are provided, including those for high-risk persons (male and female), health care workers, clinical and laboratory staff, personal service workers, food service workers, and health care personnel. Recommendations also cover dental and invasive procedures.

Public Health Task Force on Acquired Immunodeficiency Syndrome (AIDS). Summary Report. (November 1986)

Wisconsin Department of Health and Social Services, Division of Health, AIDS/HIV Program, 1 West Wilson Street, P.O. Box 309, Madison, WI 53701-0309. 608-267-5287.

This report contains a background summary of the entire AIDS problem and review of task force intentions and obligations. The report also contains the names of task force members, meeting agendas, and summaries of the recommendations ultimately made. These include recommendations for schools, prisons, jails, hospitals, nursing homes, mental health institutions, the workplace, funeral directors and pathologists, emergency medical service personnel, dental personnel, home care, child care, serologic screening, contact notification, health care services for the chronically ill, neuropsychiatric aspect of AIDS, and public and professional education issues. This summary also details the availability of documents used by the task force and recommendations for legislative changes. Four appendixes are also included.

Recommendations for Preventing Transmission of Infection With Human T-Lymphotropic Virus Type III/Lymphadenopathy-Associated Virus in the Workplace (1985)

US Department of Health and Human Services, Public Health Service, Centers for Disease Control, Technical Information Activity, AIDS Program, Atlanta, GA 30333. 404-639-2891.

This report contains detailed recommendations for precautions to prevent transmission of HTLV-III infection among health care workers and others who may be exposed in the course of their occupations. It covers exposure to possibly contaminated blood or body fluids during home care, emergency services, and other health services. Transmission from health care workers to patients is covered. Procedures for sterilization, disinfection, housekeeping, and waste disposal also are described.

Utah Medical Association, 540 E. 500 S., Salt Lake City, UT 84102.

Education Services, Speakers Bureaus, Information Dissemination Services, Policy Analysis, Recommendations.

The Utah Medical Association has established a task force to study AIDS issues and proposed

legislation, to act as "voice of the medical community" on AIDS issues, and to help educate member physicians on the care of AIDS patients. Several articles have been published in monthly magazine, the UMA Bulletin. An informal speakers bureau / media resource guide has been compiled listing various AIDS related topics and physicians who can address topics. The Utah Medical Association acts as resource to state and local governments in the development of legislation and policy on AIDS. It also provides education information to physicians and other health care professionals. J. Leon Sorenson, Executive Vice President. 801-355-7477.

Section 6: GLOSSARY

- acute (disease)** of short duration, usually with an abrupt onset, and sometimes severe (as opposed to chronic disease).
- AIDS (Acquired Immunodeficiency Syndrome)** the most severe manifestation of infection with the human immunodeficiency virus (HIV).
- amniotic fluid** the watery fluid that surrounds the fetus or unborn child in the uterus.
- antibody** substance that a person's immune system develops to help fight infection.
- antibody positive** the result of a test or series of tests to detect antibodies in blood. A positive result means that antibodies are present.
- antigen** substance such as HIV, that is foreign to a person's body. An antigen causes the immune system to form antibodies to fight the antigen.
- antiviral drug** a drug that can interfere with the life cycle of a virus.
- ARC (AIDS-Related Complex or Condition)** a term that has been used to describe a variety of symptoms caused by HIV infection. These symptoms are usually less severe than those associated with AIDS and can include loss of appetite, weight loss, fever, night sweats, skin rashes, diarrhea, tiredness, lack of resistance to infection, and swollen lymph nodes.
- asymptomatic** having a disease-causing agent in the body but showing no outward signs of disease.
- asymptomatic HIV seropositive** the condition of testing positive for HIV antibody without showing any symptoms of disease. A person who is HIV-positive, even without symptoms, is capable of transmitting the virus to others.
- AZT** the first FDA-approved drug used to treat AIDS.
- body fluids** fluids that the body makes, for example, semen, blood, vaginal secretions, and breast milk.
- carrier** a person who apparently is healthy, but who is infected with some disease-causing organism (such as HIV or HBV) that can be transmitted to another person.
- Centers for Disease Control (CDC)** Federal health agency that is a branch of the U.S. Department of Health and Human Services. The CDC provides national health and safety guidelines and statistical data on AIDS and other diseases.
- chronic (disease)** lasting a long time, or recurring often.

- cytomegalovirus (CMV)** A viral infection that may occur without any symptoms or result in mild flu-like symptoms. Severe CMV infections can result in hepatitis, mononucleosis, or pneumonia. CMV is "shed" in body fluids (urine, semen, sputum and saliva). In the presence of immune deficiency, such as AIDS, it can also affect other internal organs and vision, sometimes leading to blindness.
- decontamination** removing disease-causing agents, thus making the environment or specific object safe to handle.
- diagnosis** identifying a disease by its signs, symptoms, course, and laboratory findings.
- Elisa test** a screening blood test for the presence of antibodies to HIV. A positive result from an Elisa test always needs to be confirmed by a second Elisa test, and a more specific test.
- epidemiology** the study of the incidence, distribution, and control of a disease in a population.
- etiology** the causes or origins of disease.
- exposure** the act or condition of coming in contact with, but not necessarily being infected by, a disease-causing agent.
- false negative** incorrect test result indicating that no antibodies are present when they are.
- false positive** incorrect test result indicating that antibodies are present when they are not.
- HBIG** hepatitis B immune globulin, which is a preparation that provides some temporary protection following exposure to HBV if given within 7 days after exposure.
- helper/suppressor T-cells** white blood cells that are part of the immune system.
- hepatitis B** a viral infection that affects the liver. The effects of the disease on the liver can range from mild, even inapparent, to severe or fatal.
- high-risk behavior** a term that describes certain activities that increase the risk of transmitting HIV or HBV. These include anal intercourse, vaginal intercourse without a condom, oral-anal contact, semen in the mouth, sharing intravenous needles, intimate blood contact.
- HIV antibody screening test** a blood test that reveals the presence of antibodies to HIV.
- HIV** (human immunodeficiency virus) the cause of AIDS.
- HIV antibody positive** a test result indicating that HIV antibodies are found.
- HIV antigen positive** the result of antigen testing where it has been found that HIV is present. Antigen testing can be useful in predicting the progression of HIV infection and monitoring treatment.

HIV disease	the term to describe the spectrum of HIV infection, chronologically described as a progression from asymptomatic seropositive to AIDS.
immune status	the state of the body's immune system. Factors affecting immune status include heredity, age, diet, and physical and mental health.
immune system	a body system that helps resist disease-causing germs, viruses, or other infections.
immunosuppressed	a condition or state of the body in which the immune system does not work normally.
incubation period	the time period between infection and appearance of disease symptoms.
infection	a condition or state of the body in which a disease-causing agent has entered it.
intravenous drugs	drugs injected by needle directly into a vein.
latency	a period when a virus is in the body but is inactive.
MMWR	(<i>Morbidity and Mortality Weekly Report</i>) a CDC weekly publication that gives information on current trends in the nation's health.
mucous membrane	a moist layer of tissue that lines the mouth, eyes, nostrils, vagina, anus, or urethra.
nonintact skin	skin that is chapped, abraded, weeping, or that has rashes or eruptions.
opportunistic infection	infection that usually is warded off by a healthy immune system. If the immune system is not strong and effective, these infections "take the opportunity" to harm the body.
pathogen	a disease-causing substance.
percutaneously	entering the body through the skin, for example, by needlestick or on broken skin.
pericardial fluid	a clear fluid contained in the thin, membranous sac that surrounds the heart.
perinatal	happening just before, during, or immediately after birth.
peritoneal fluid	fluid contained in the membrane lining of the abdominal cavity.
person with AIDS (PWA)	a preferred term for a person diagnosed with AIDS.
pleural fluid	fluid contained in the membrane that covers the lung and lines the chest cavity.
<i>Pneumocystis carinii</i> pneumonia (pcp)	a lung infection that has been common among people infected with HIV or diagnosed with AIDS.

Glossary

prophylaxis	any substance or steps taken to prevent something from happening (for example, condoms, vaccines).
safe sex	sexual practices that involve no exchange of blood, semen, or vaginal secretions.
seroconversion	the process by which a person previously known to be antibody negative converts to testing positive for HIV antibodies.
serologic test	any number of tests that are performed on blood. Usually refers to a test that measures antibodies to a virus.
seropositive	a condition in which antibodies to a disease-causing agent are found in the blood; a positive reaction to a blood test. The presence of antibodies indicates that a person has been exposed to the agent.
sterilization	destruction of all microbial life by means of steam, gas, or liquid agents.
subcutaneous	beneath or introduced beneath the skin (for example, subcutaneous injections).
syndrome	a collection of signs and symptoms that occur together.
tuberculocidal	capable of killing a moderately resistant bacterium, <i>Mycobacterium tuberculosis</i> var. <i>bovis</i> . This organism is one used in laboratory tests to classify disinfectant chemicals according to their power.
vaccine	a substance that produces or increases immunity and protection against a particular disease.
virus	organism that causes disease.
Western blot test	a blood test used to detect antibodies to HIV. The test can be used to confirm Elisa test results (see Elisa test).
window period	the time it takes the immune system to develop antibodies to the virus after exposure to it.

Section 7: Guidelines for Prevention of Transmission of Human Immunodeficiency Virus and Hepatitis B Virus to Health-Care and Public-Safety Workers

**Guidelines for Prevention of
Transmission of
Human Immunodeficiency Virus
and
Hepatitis B Virus
to Health-Care and
Public-Safety Workers**

A Response to P.L. 100-607
The Health Omnibus Programs Extension
Act of 1988

**U.S. Department of Health and Human Services
Public Health Service
Centers for Disease Control
Atlanta, Georgia**

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**The material in this report was developed by the
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Centers for Disease Control**

TABLE OF CONTENTS

I.	Introduction	1
A.	Background	1
B.	Purpose and Organization of Document	1
C.	Modes and Risk of Virus Transmission in the Workplace	2
D.	Transmission of Hepatitis B Virus to Workers	3
1.	Health-care workers	3
2.	Emergency medical and public-safety workers	3
3.	Vaccination for hepatitis B virus	3
E.	Transmission of Human Immunodeficiency Virus to Workers	3
1.	Health-care workers with AIDS	3
2.	Human immunodeficiency virus transmission in the workplace	4
3.	Emergency medical service and public-safety workers	5
II.	Principles of Infection Control and Their Application to Emergency and Public-Safety Workers	6
A.	General Infection Control	6
B.	Universal Blood and Body Fluid Precautions to Prevent Occupational HIV and HBV Transmission	6
III.	Employer Responsibilities	8
A.	General	8
B.	Medical	8
1.	Hepatitis B vaccination	9
2.	Management of percutaneous exposure to blood and other infectious body fluids	9
a.	Hepatitis B virus postexposure management	9
b.	Human immunodeficiency virus postexposure management	9
3.	Management of human bites	10
4.	Documentation of exposure and reporting	10
5.	Management of HBV- or HIV-infected workers	11
C.	Disinfection, Decontamination, and Disposal	11
1.	Needle and sharps disposal	11
2.	Hand washing	12
3.	Cleaning, disinfecting, and sterilizing	12
4.	Cleaning and decontaminating spills of blood	12
5.	Laundry	12
6.	Decontamination and laundering of protective clothing	13
7.	Infective waste	13
IV.	Fire and Emergency Medical Services	14
A.	Personal Protective Equipment	14
1.	Gloves	14
2.	Masks, eyewear, and gowns	15
3.	Resuscitation equipment	15
V.	Law-Enforcement and Correctional-Facility Officers	16
A.	Law-Enforcement and Correctional-Facilities Considerations	16
1.	Fights and assaults	16
2.	Cardiopulmonary resuscitation	16
B.	Law-Enforcement Considerations	17
1.	Searches and evidence handling	17

2. Handling deceased persons and body removal	18
3. Autopsies	18
4. Forensic laboratories	18
C. Correctional-Facility Considerations	19
1. Searches	19
2. Decontamination and disposal	20
VI. References	21
VII. Tables	24
Appendix A. Update: Universal Precautions for Prevention of Transmission of Human Immunodeficiency Virus, Hepatitis B Virus, and Other Bloodborne Pathogens in Health-Care Settings (Reprinted from Morbidity and Mortality Weekly Report, 1988; 37:377-382,387,388.)	31
Appendix B. Recommendations for Prevention of HIV Transmission in Health-Care Settings (Reprinted from Morbidity and Mortality Weekly Report 1987; 36 [no. 2S].)	36

I. Introduction

A. Background

This document is a response to recently enacted legislation, Public Law 100-607, The Health Omnibus Programs Extension Act of 1988, Title II, Programs with Respect to Acquired Immune Deficiency Syndrome ("AIDS Amendments of 1988"). Subtitle E, General Provisions, Section 253(a) of Title II specifies that "the Secretary of Health and Human Services, acting through the Director of the Centers for Disease Control, shall develop, issue, and disseminate guidelines to all health workers, public safety workers (including emergency response employees) in the United States concerning –

- (1) methods to reduce the risk in the workplace of becoming infected with the etiologic agent for acquired immune deficiency syndrome; and
- (2) circumstances under which exposure to such etiologic agent may occur."

It is further noted that "The Secretary [of Health and Human Services] shall transmit the guidelines issued under subsection (a) to the Secretary of Labor for use by the Secretary of Labor in the development of standards to be issued under the Occupational Safety and Health Act of 1970," and that "the Secretary, acting through the Director of the Centers for Disease Control, shall develop a model curriculum for emergency response employees with respect to the prevention of exposure to the etiologic agent for acquired immune deficiency syndrome during the process of responding to emergencies."

Following development of these guidelines and curriculum, "[t]he Secretary shall –

- (A) transmit to State public health officers copies of the guidelines and the model curriculum developed under paragraph (1) with the request that such officers disseminate such copies as appropriate throughout the State; and
- (B) make such copies available to the public."

B. Purpose and Organization of Document

The purpose of this document is to provide an overview of the modes of transmission of human immunodeficiency virus (HIV) in the workplace, an assessment of the risk of transmission under various assumptions, principles underlying the control of risk, and specific risk-control recommendations for employers and workers. This document also includes information on medical management of persons who have sustained an exposure at the workplace to these viruses (e.g., an emergency medical technicians who incur a needle-stick injury while performing professional duties). These guidelines are intended for use by a technically informed audience. As noted above, a separate model curriculum based on the principles and practices discussed in this document is being developed for use in training workers and will contain less technical wording.

Information concerning the protection of workers against acquisition of the human immunodeficiency virus (HIV) while performing job duties, the virus that causes AIDS, is presented here. Information on hepatitis B virus (HBV) is also presented in this document on the basis of the following assumptions:

- the modes of transmission for hepatitis B virus (HBV) are similar to those of HIV,
- the potential for HBV transmission in the occupational setting is greater than for HIV,
- there is a larger body of experience relating to controlling transmission of HBV in the workplace, and

- general practices to prevent the transmission of HBV will also minimize the risk of transmission of HIV.

Blood-borne transmission of other pathogens not specifically addressed here will be interrupted by adherence to the precautions noted below. It is important to note that the implementation of control measures for HIV and HBV does not obviate the need for continued adherence to general infection-control principles and general hygiene measures (e.g., hand washing) for preventing transmission of other infectious diseases to both worker and client. General guidelines for control of these diseases have been published (1,2,3).

This document was developed primarily to provide guidelines for fire-service personnel, emergency medical technicians, paramedics (see section IV, page 14), and law-enforcement and correctional-facility personnel (see section V, page 16). Throughout the report, paramedics and emergency medical technicians are called "emergency medical workers" and fire-service, law-enforcement, and correctional-facility personnel, "public-safety workers." Previously issued guidelines address the needs of hospital-, laboratory-, and clinic-based health-care workers and are reprinted in Appendix A (see page 31) and Appendix B (see page 36). A condensation of general guidelines for protection of workers from transmission of blood-borne pathogens, derived from the Joint Advisory Notice of the Departments of Labor and Health and Human Services (4), is provided in section III (see page 8).

C. Modes and Risk of Virus Transmission in the Workplace

Although the potential for HBV transmission in the workplace setting is greater than for HIV, the modes of transmission for these two viruses are similar. Both have been transmitted in occupational settings only by percutaneous inoculation or contact with an open wound, nonintact (e.g., chapped, abraded, weeping, or dermatitic) skin, or mucous membranes to blood, blood-contaminated body fluids, or concentrated virus. **Blood is the single most important source of HIV and HBV in the workplace setting.** Protection measures against HIV and HBV for workers should focus primarily on preventing these types of exposures to blood as well as on delivery of HBV vaccination.

The risk of hepatitis B infection following a parenteral (i.e., needle stick or cut) exposure to blood is directly proportional to the probability that the blood contains hepatitis B surface antigen (HBsAg), the immunity status of the recipient, and on the efficiency of transmission (5). The probability of the source of the blood being HBsAg positive varies from 1 to 3 per thousand in the general population to 5%–15% in groups at high risk for HBV infection, such as immigrants from areas of high endemicity (China and Southeast Asia, sub-Saharan Africa, most Pacific islands, and the Amazon Basin); clients in institutions for the mentally retarded; intravenous drug users; homosexually active males; and household (sexual and non-sexual) contacts of HBV carriers. Of persons who have not had prior hepatitis B vaccination or postexposure prophylaxis, 6%–30% of persons who receive a needle-stick exposure from an HBsAg-positive individual will become infected (5).

The risk of infection with HIV following one needle-stick exposure to blood from a patient known to be infected with HIV is approximately 0.5% (6,7). This rate of transmission is considerably lower than that for HBV, probably as a result of the significantly lower concentrations of virus in the blood of HIV-infected persons. Table 1 (see page 24) presents theoretical data concerning the likelihood of infection given repeated needle-stick injuries involving patients whose HIV serostatus is unknown. Though inadequately quantified, the risk from exposure of nonintact skin or mucous membranes is likely to be far less than that from percutaneous inoculation.

D. Transmission of Hepatitis B Virus to Workers

1. Health-care workers

In 1987, the CDC estimated the total number of HBV infections in the United States to be 300,000 per year, with approximately 75,000 (25%) of infected persons developing acute hepatitis. Of these infected individuals, 18,000–30,000 (6%–10%) will become HBV carriers, at risk of developing chronic liver disease (chronic active hepatitis, cirrhosis, and primary liver cancer), and infectious to others.

CDC has estimated that 12,000 health-care workers whose jobs entail exposure to blood become infected with HBV each year, that 500–600 of them are hospitalized as a result of that infection, and that 700–1,200 of those infected become HBV carriers. Of the infected workers, approximately 250 will die (12–15 from fulminant hepatitis, 170–200 from cirrhosis, and 40–50 from liver cancer). Studies indicate that 10%–30% of health-care or dental workers show serologic evidence of past or present HBV infection.

2. Emergency medical and public-safety workers

Emergency medical workers have an increased risk for hepatitis B infection (8,9,10). The degree of risk correlates with the frequency and extent of blood exposure during the conduct of work activities. A few studies are available concerning risk of HBV infection for other groups of public-safety workers (law-enforcement personnel and correctional-facility workers), but reports that have been published do not document any increased risk for HBV infection (11,12,13). Nevertheless, in occupational settings in which workers may be routinely exposed to blood or other body fluids as described below, an increased risk for occupational acquisition of HBV infection must be assumed to be present.

3. Vaccination for hepatitis B virus

A safe and effective vaccine to prevent hepatitis B has been available since 1982. Vaccination has been recommended for health-care workers regularly exposed to blood and other body fluids potentially contaminated with HBV (5,14,15). In 1987, the Department of Health and Human Services and the Department of Labor stated that hepatitis B vaccine should be provided to all such workers at no charge to the worker (4).

Available vaccines stimulate active immunity against HBV infection and provide over 90% protection against hepatitis B for 7 or more years following vaccination (5). Hepatitis B vaccines also are 70–88% effective when given within 1 week after HBV exposure. Hepatitis B immune globulin (HBIG), a preparation of immunoglobulin with high levels of antibody to HBV (anti-HBs), provides temporary passive protection following exposure to HBV. Combination treatment with hepatitis B vaccine and HBIG is over 90% effective in preventing hepatitis B following a documented exposure (5).

E. Transmission of Human Immunodeficiency Virus to Workers

1. Health-care workers with AIDS

As of September 19, 1988, a total of 3,182 (5.1%) of 61,929 adults with AIDS, who had been reported to the CDC national surveillance system and for whom occupational information was available, reported being employed in a health-care setting. Of the health-care workers with AIDS, 95%

reported high-risk behavior; for the remaining 5% (169 workers), the means of HIV acquisition was undetermined.

Of these 169 health-care workers with AIDS with undetermined risk, information is incomplete for 28 (17%) because of death or refusal to be interviewed; 97 (57%) are still being investigated. The remaining 44 (26%) health-care workers were interviewed directly or had other follow-up information available. The occupations of these 44 were nine nursing assistants (20%); eight physicians (18%), four of whom were surgeons; eight housekeeping or maintenance workers (18%); six nurses (14%); four clinical laboratory technicians (9%); two respiratory therapists (5%); one dentist (2%); one paramedic (2%); one embalmer (2%); and four others who did not have contact with patients (9%). Eighteen of these 44 health-care workers reported parenteral and/or other non-needle-stick exposure to blood or other body fluids from patients in the 10 years preceding their diagnosis of AIDS. None of these exposures involved a patient with AIDS or known HIV infection, and HIV seroconversion of the health-care worker was not documented following a specific exposure.

2. Human immunodeficiency virus transmission in the workplace

As of July 31, 1988, 1,201 health-care workers had been enrolled and tested for HIV antibody in ongoing CDC surveillance of health-care workers exposed via needle stick or splashes to skin or mucous membranes to blood from patients known to be HIV-infected (16). Of 860 workers who had received needle-stick injuries or cuts with sharp objects (i.e., parenteral exposures) and whose serum had been tested for HIV antibody at least 180 days after exposure, 4 were positive, yielding a seroprevalence rate of 0.47%. Three of these individuals experienced an acute retroviral syndrome associated with documented seroconversion. Investigation revealed no nonoccupational risk factors for these three workers. Serum collected within 30 days of exposure was not available from the fourth person. This worker had an HIV-seropositive sexual partner, and heterosexual acquisition of infection cannot be excluded. None of the 103 workers who had contamination of mucous membranes or nonintact skin and whose serum had been tested at least 180 days after exposure developed serologic evidence of HIV infection.

Two other ongoing prospective studies assess the risk of nosocomial acquisition of HIV infection among health-care workers in the United States. As of April 1988, the National Institutes of Health had tested 983 health-care workers, 137 with documented needle-stick injuries and 345 health-care workers who had sustained mucous-membrane exposures to blood or other body fluids of HIV-infected patients; none had seroconverted (17) (one health-care worker who subsequently experienced an occupational HIV seroconversion has since been reported from NIH [18]). As of March 15, 1988, a similar study at the University of California of 212 health-care workers with 625 documented accidental parenteral exposures involving HIV-infected patients had identified one seroconversion following a needle stick (19). Prospective studies in the United Kingdom and Canada show no evidence of HIV transmission among 220 health-care workers with parenteral, mucous-membrane, or cutaneous exposures (20,21).

In addition to the health-care workers enrolled in these longitudinal surveillance studies, case histories have been published in the scientific literature for 19 HIV-infected health-care workers (13 with documented seroconversion and 6 without documented seroconversion). None of these workers reported nonoccupational risk factors (see Table 2, pages 25, 26).

3. Emergency medical service and public-safety workers

In addition to the one paramedic with undetermined risk discussed above, three public-safety workers (law-enforcement officers) are classified in the undetermined risk group. Follow-up investigations of these workers could not determine conclusively if HIV infection was acquired during the performance of job duties.

II. Principles of Infection Control and Their Application to Emergency and Public-Safety Workers

A. General Infection Control

Within the health-care setting, general infection control procedures have been developed to minimize the risk of patient acquisition of infection from contact with contaminated devices, objects, or surfaces or of transmission of an infectious agent from health-care workers to patients (1,2,3). Such procedures also protect workers from the risk of becoming infected. General infection-control procedures are designed to prevent transmission of a wide range of microbiological agents and to provide a wide margin of safety in the varied situations encountered in the health-care environment.

General infection-control principles are applicable to other work environments where workers contact other individuals and where transmission of infectious agents may occur. The modes of transmission noted in the hospital and medical office environment are observed in the work situations of emergency and public-safety workers, as well. Therefore, the principles of infection control developed for hospital and other health-care settings are also applicable to these work situations. Use of general infection control measures, as adapted to the work environments of emergency and public-safety workers, is important to protect both workers and individuals with whom they work from a variety of infectious agents, not just HIV and HBV.

Because emergency and public-safety workers work in environments that provide inherently unpredictable risks of exposures, general infection-control procedures should be adapted to these work situations. Exposures are unpredictable, and protective measures may often be used in situations that do not appear to present risk. Emergency and public-safety workers perform their duties in the community under extremely variable conditions; thus, control measures that are simple and uniform across all situations have the greatest likelihood of worker compliance. Administrative procedures to ensure compliance also can be more readily developed than when procedures are complex and highly variable.

B. Universal Blood and Body Fluid Precautions to Prevent Occupational HIV and HBV Transmission

In 1985, CDC developed the strategy of “universal blood and body fluid precautions” to address concerns regarding transmission of HIV in the health-care setting (6). The concept, now referred to simply as “universal precautions” stresses that all patients should be assumed to be infectious for HIV and other blood-borne pathogens. In the hospital and other health-care setting, “universal precautions” should be followed when workers are exposed to blood, certain other body fluids (amniotic fluid, pericardial fluid, peritoneal fluid, pleural fluid, synovial fluid, cerebrospinal fluid, semen, and vaginal secretions), or any body fluid visibly contaminated with blood. Since HIV and HBV transmission has not been documented from exposure to other body fluids (feces, nasal secretions, sputum, sweat, tears, urine, and vomitus), “universal precautions” do not apply to these fluids. Universal precautions also do not apply to saliva, except in the dental setting, where saliva is likely to be contaminated with blood (see Appendix A, page 32).

For the purpose of this document, human “exposure” is defined as contact with blood or other body fluids to which universal precautions apply through percutaneous inoculation or contact with an open wound, nonintact skin, or mucous membrane during the performance of normal job duties. An “exposed worker” is defined, for the purposes of this document, as an individual exposed, as described above, while performing normal job duties.

The unpredictable and emergent nature of exposures encountered by emergency and public-safety workers may make differentiation between hazardous body fluids and those which are not hazardous very difficult and often impossible. For example, poor lighting may limit the worker’s ability to detect visible blood in

vomit or feces. Therefore, when emergency medical and public-safety workers encounter body fluids under uncontrolled, emergency circumstances in which differentiation between fluid types is difficult, if not impossible, they should treat all body fluids as potentially hazardous.

The application of the principles of universal precautions to the situations encountered by these workers results in the development of guidelines (listed below) for work practices, use of personal protective equipment, and other protective measures. To minimize the risks of acquiring HIV and HBV during performance of job duties, emergency and public-safety workers should be protected from exposure to blood and other body fluids as circumstances dictate. Protection can be achieved through adherence to work practices designed to minimize or eliminate exposure and through use of personal protective equipment (i.e., gloves, masks, and protective clothing), which provide a barrier between the worker and the exposure source. In some situations, redesign of selected aspects of the job through equipment modifications or environmental control can further reduce risk. These approaches to primary prevention should be used together to achieve maximal reduction of the risk of exposure.

If exposure of an individual worker occurs, medical management, consisting of collection of pertinent medical and occupational history, provision of treatment, and counseling regarding future work and personal behaviors, may reduce risk of developing disease as a result of the exposure episode (22). Following episodic (or continuous) exposure, decontamination and disinfection of the work environment, devices, equipment, and clothing or other forms of personal protective equipment can reduce subsequent risk of exposures. Proper disposal of contaminated waste has similar benefits.

III. Employer Responsibilities

A. General

Detailed recommendations for employer responsibilities in protecting workers from acquisition of blood-borne diseases in the workplace have been published in the Department of Labor and Department of Health and Human Services Joint Advisory Notice and are summarized here (4). In developing programs to protect workers, employers should follow a series of steps: 1) classification of work activity, 2) development of standard operating procedures, 3) provision of training and education, 4) development of procedures to ensure and monitor compliance, and 5) workplace redesign. As a first step, every employer should classify work activities into one of three categories of potential exposure (see Table 3, page 27). Employers should make protective equipment available to all workers when they are engaged in Category I or II activities. Employers should ensure that the appropriate protective equipment is used by workers when they perform Category I activities.

As a second step, employers should establish a detailed work practices program that includes standard operating procedures (SOPs) for all activities having the potential for exposure. Once these SOPs are developed, an initial and periodic worker education program to assure familiarity with work practices should be provided to potentially exposed workers. No worker should engage in such tasks or activities before receiving training pertaining to the SOPs, work practices, and protective equipment required for that task. Examples of personal protective equipment for the prehospital setting (defined as a setting where delivery of emergency health care takes place away from a hospital or other health-care setting) are provided in Table 4 (page 28). (A curriculum for such training programs is being developed in conjunction with these guidelines and should be consulted for further information concerning such training programs.)

To facilitate and monitor compliance with SOPs, administrative procedures should be developed and records kept as described in the Joint Advisory Notice (4). Employers should monitor the workplace to ensure that required work practices are observed and that protective clothing and equipment are provided and properly used. The employer should maintain records documenting the administrative procedures used to classify job activities and copies of all SOPs for tasks or activities involving predictable or unpredictable exposure to blood or other body fluids to which universal precautions apply. In addition, training records, indicating the dates of training sessions, the content of those training sessions along with the names of all persons conducting the training, and the names of all those receiving training should also be maintained.

Whenever possible, the employer should identify devices and other approaches to modifying the work environment which will reduce exposure risk. Such approaches are desirable, since they don't require individual worker action or management activity. For example, jails and correctional facilities should have classification procedures that require the segregation of offenders who indicate through their actions or words that they intend to attack correctional-facility staff with the intent of transmitting HIV or HBV.

B. Medical

In addition to the general responsibilities noted above, the employer has the specific responsibility to make available to the worker a program of medical management. This program is designed to provide for the reduction of risk of infection by HBV and for counseling workers concerning issues regarding HIV and HBV. These services should be provided by a licensed health professional. All phases of medical management and counseling should ensure that the confidentiality of the worker's and client's medical data is protected.

1. Hepatitis B vaccination

All workers whose jobs involve participation in tasks or activities with exposure to blood or other body fluids to which universal precautions apply (as defined above on page 6) should be vaccinated with hepatitis B vaccine.

2. Management of percutaneous exposure to blood and other infectious body fluids

Once an exposure has occurred (as defined above on page 6), a blood sample should be drawn after consent is obtained from the individual from whom exposure occurred and tested for hepatitis B surface antigen (HBsAg) and antibody to human immunodeficiency virus (HIV antibody). Local laws regarding consent for testing source individuals should be followed. Policies should be available for testing source individuals in situations where consent cannot be obtained (e.g., an unconscious patient). Testing of the source individual should be done at a location where appropriate pretest counseling is available; posttest counseling and referral for treatment should be provided. It is extremely important that all individuals who seek consultation for any HIV-related concerns receive counseling as outlined in the "Public Health Service Guidelines for Counseling and Antibody Testing to Prevent HIV Infection and AIDS" (22).

a. Hepatitis B virus postexposure management

For an exposure to a source individual found to be positive for HBsAg, the worker who has not previously been given hepatitis B vaccine should receive the vaccine series. A single dose of hepatitis B immune globulin (HBIG) is also recommended, if this can be given within 7 days of exposure. For exposures from an HBsAg-positive source to workers who have previously received vaccine, the exposed worker should be tested for antibody to hepatitis B surface antigen (anti-HBs), and given one dose of vaccine and one dose of HBIG if the antibody level in the worker's blood sample is inadequate (i.e., <10 SRU by RIA, negative by EIA) (5).

If the source individual is negative for HBsAg and the worker has not been vaccinated, this opportunity should be taken to provide hepatitis B vaccination.

If the source individual refuses testing or he/she cannot be identified, the unvaccinated worker should receive the hepatitis B vaccine series. HBIG administration should be considered on an individual basis when the source individual is known or suspected to be at high risk of HBV infection. Management and treatment, if any, of previously vaccinated workers who receive an exposure from a source who refuses testing or is not identifiable should be individualized (5).

b. Human immunodeficiency virus postexposure management

For any exposure to a source individual who has AIDS, who is found to be positive for HIV infection (as defined in Appendix B, see page 42), or who refuses testing, the worker should be counseled regarding the risk of infection and evaluated clinically and serologically for evidence of HIV infection as soon as possible after the exposure. In view of the evolving nature of HIV postexposure management, the health-care provider should be well informed of current PHS guidelines on this subject. The worker should be advised to report and seek medical evaluation for any acute febrile illness that occurs within 12 weeks after the exposure. Such an illness, particularly one characterized by fever, rash, or lymphadenopathy, may be indicative of recent HIV infection. Following the initial test at the time of exposure,

seronegative workers should be retested 6 weeks, 12 weeks, and 6 months after exposure to determine whether transmission has occurred. During this follow-up period (especially the first 6-12 weeks after exposure, when most infected persons are expected to seroconvert), exposed workers should follow U.S. Public Health Service (PHS) recommendations for preventing transmission of HIV (22). These include refraining from blood donation and using appropriate protection during sexual intercourse (23). During all phases of follow-up, it is vital that worker confidentiality be protected.

If the source individual was tested and found to be seronegative, baseline testing of the exposed worker with follow-up testing 12 weeks later may be performed if desired by the worker or recommended by the health-care provider.

If the source individual cannot be identified, decisions regarding appropriate follow-up should be individualized. Serologic testing should be made available by the employer to all workers who may be concerned they have been infected with HIV through an occupational exposure as defined above (see page 6).

3. Management of human bites

On occasion, police and correctional-facility officers are intentionally bitten by suspects or prisoners. When such bites occur, routine medical and surgical therapy (including an assessment of tetanus vaccination status) should be implemented as soon as possible, since such bites frequently result in infection with organisms other than HIV and HBV. Victims of bites should be evaluated as described above (see page 9) for exposure to blood or other infectious body fluids.

(As noted below in Appendix A, page 32, saliva of some persons infected with HBV has been shown to contain HBV-DNA at concentrations 1/1,000 to 1/10,000 of that found in the infected person's serum (24). HbsAg-positive saliva has been shown to be infectious when injected into experimental animals and in human bite exposures (25-27). However, HBsAg-positive saliva has not been shown to be infectious when applied to oral mucous membranes in experimental primate studies (27) or through contamination of musical instruments or cardiopulmonary resuscitation dummies used by HBV carriers (28,29). Epidemiologic studies of nonsexual household contacts of HIV-infected patients, including several small series in which HIV transmission failed to occur after bites or after percutaneous inoculation or contamination of cuts and open wounds with saliva from HIV-infected patients, suggest that the potential for salivary transmission of HIV is remote (7,30,31,32,33). One case report from Germany has suggested the possibility of transmission of HIV in a household setting from an infected child to a sibling through a human bite (34). The bite did not break the skin or result in bleeding. Since the date of seroconversion to HIV was not known for either child in this case, evidence for the role of saliva in the transmission of virus is unclear (34).)

4. Documentation of exposure and reporting

As part of the confidential medical record, the circumstances of exposure should be recorded. Relevant information includes the activity in which the worker was engaged at the time of exposure, the extent to which appropriate work practices and protective equipment were used, and a description of the source of exposure.

Employers have a responsibility under various federal and state laws and regulations to report occupational illnesses and injuries. Existing programs in the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services; the Bureau of Labor Statistics,

Department of Labor (DOL); and the Occupational Safety and Health Administration (DOL) receive such information for the purposes of surveillance and other objectives. Cases of infectious disease, including AIDS and HBV infection, are reported to the Centers for Disease Control through State health departments.

5. Management of HBV- or HIV-infected workers

Transmission of HBV from health-care workers to patients has been documented. Such transmission has occurred during certain types of invasive procedures (e.g., oral and gynecologic surgery) in which health-care workers, when tested, had very high concentrations of HBV in their blood (at least 100 million infectious virus particles per milliliter, a concentration much higher than occurs with HIV infection), and the health-care workers sustained a puncture wound while performing invasive procedures or had exudative or weeping lesions or microlacerations that allowed virus to contaminate instruments or open wounds of patients (35,36). A worker who is HBsAg positive and who has transmitted hepatitis B virus to another individual during the performance of his or her job duties should be excluded from the performance of those job duties which place other individuals at risk for acquisition of hepatitis B infection.

Workers with impaired immune systems resulting from HIV infection or other causes are at increased risk of acquiring or experiencing serious complications of infectious disease. Of particular concern is the risk of severe infection following exposure to other persons with infectious diseases that are easily transmitted if appropriate precautions are not taken (e.g., measles, varicella). Any worker with an impaired immune system should be counseled about the potential risk associated with providing health care to persons with any transmissible infection and should continue to follow existing recommendations for infection control to minimize risk of exposure to other infectious agents (2,3). Recommendations of the Immunization Practices Advisory Committee (ACIP) and institutional policies concerning requirements for vaccinating workers with live-virus vaccines (e.g., measles, rubella) should also be considered.

The question of whether workers infected with HIV can adequately and safely be allowed to perform patient-care duties or whether their work assignments should be changed must be determined on an individual basis. These decisions should be made by the worker's personal physician(s) in conjunction with the employer's medical advisors.

C. Disinfection, Decontamination, and Disposal

As described in Section I.C. (see page 2), the only documented occupational risks of HIV and HBV infection are associated with parenteral (including open wound) and mucous membrane exposure to blood and other potentially infectious body fluids. Nevertheless, the precautions described below should be routinely followed.

1. Needle and sharps disposal

All workers should take precautions to prevent injuries caused by needles, scalpel blades, and other sharp instruments or devices during procedures; when cleaning used instruments; during disposal of used needles; and when handling sharp instruments after procedures. To prevent needle-stick injuries, needles should not be recapped, purposely bent or broken by hand, removed from disposable syringes, or otherwise manipulated by hand. After they are used, disposable syringes and needles, scalpel blades, and other sharp items should be placed in puncture-resistant containers for disposal; the puncture-resistant containers should be located as close as practical to the use area (e.g., in the

ambulance or, if sharps are carried to the scene of victim assistance from the ambulance, a small puncture-resistant container should be carried to the scene, as well). Reusable needles should be left on the syringe body and should be placed in a puncture-resistant container for transport to the reprocessing area.

2. Hand washing

Hands and other skin surfaces should be washed immediately and thoroughly if contaminated with blood, other body fluids to which universal precautions apply, or potentially contaminated articles. Hands should always be washed after gloves are removed, even if the gloves appear to be intact. Hand washing should be completed using the appropriate facilities, such as utility or restroom sinks. Waterless antiseptic hand cleanser should be provided on responding units to use when hand-washing facilities are not available. When hand-washing facilities are available, wash hands with warm water and soap. When hand-washing facilities are not available, use a waterless antiseptic hand cleanser. The manufacturer's recommendations for the product should be followed.

3. Cleaning, disinfecting, and sterilizing

Table 5 (see pages 29, 30) presents the methods and applications for cleaning, disinfecting, and sterilizing equipment and surfaces in the prehospital setting. These methods also apply to housekeeping and other cleaning tasks. Previously issued guidelines for health-care workers contain more detailed descriptions of these procedures and may be found in Appendix B (see page 40).

4. Cleaning and decontaminating spills of blood

All spills of blood and blood-contaminated fluids should be promptly cleaned up using an EPA-approved germicide or a 1:100 solution of household bleach in the following manner while wearing gloves. Visible material should first be removed with disposable towels or other appropriate means that will ensure against direct contact with blood. If splashing is anticipated, protective eyewear should be worn along with an impervious gown or apron which provides an effective barrier to splashes. The area should then be decontaminated with an appropriate germicide. Hands should be washed following removal of gloves. Soiled cleaning equipment should be cleaned and decontaminated or placed in an appropriate container and disposed of according to agency policy. Plastic bags should be available for removal of contaminated items from the site of the spill.

Shoes and boots can become contaminated with blood in certain instances. Where there is massive blood contamination on floors, the use of disposable impervious shoe coverings should be considered. Protective gloves should be worn to remove contaminated shoe coverings. The coverings and gloves should be disposed of in plastic bags. A plastic bag should be included in the crime scene kit or the car which is to be used for the disposal of contaminated items. Extra plastic bags should be stored in the police cruiser or emergency vehicle.

5. Laundry

Although soiled linen may be contaminated with pathogenic microorganisms, the risk of actual disease transmission is negligible. Rather than rigid procedures and specifications, hygienic storage and processing of clean and soiled linen are recommended. Laundry facilities and/or services should be made routinely available by the employer. Soiled linen should be handled as little as possible and with minimum agitation to prevent gross microbial contamination of the air and of persons handling the linen. All soiled linen should be bagged at the location where it was used. Linen soiled with blood

should be placed and transported in bags that prevent leakage. Normal laundry cycles should be used according to the washer and detergent manufacturers' recommendations.

6. Decontamination and laundering of protective clothing

Protective work clothing contaminated with blood or other body fluids to which universal precautions apply should be placed and transported in bags or containers that prevent leakage. Personnel involved in the bagging, transport, and laundering of contaminated clothing should wear gloves. Protective clothing and station and work uniforms should be washed and dried according to the manufacturer's instructions. Boots and leather goods may be brush-scrubbed with soap and hot water to remove contamination.

7. Infective waste

The selection of procedures for disposal of infective waste is determined by the relative risk of disease transmission and application of local regulations, which vary widely. In all cases, local regulations should be consulted prior to disposal procedures and followed. Infective waste, in general, should either be incinerated or should be decontaminated before disposal in a sanitary landfill. Bulk blood, suctioned fluids, excretions, and secretions may be carefully poured down a drain connected to a sanitary sewer, where permitted. Sanitary sewers may also be used to dispose of other infectious wastes capable of being ground and flushed into the sewer, where permitted. Sharp items should be placed in puncture-proof containers and other blood-contaminated items should be placed in leak-proof plastic bags for transport to an appropriate disposal location.

Prior to the removal of protective equipment, personnel remaining on the scene after the patient has been cared for should carefully search for and remove contaminated materials. Debris should be disposed of as noted above.

IV. Fire and Emergency Medical Services

The guidelines that appear in this section apply to fire and emergency medical services. This includes structural fire fighters, paramedics, emergency medical technicians, and advanced life support personnel. Fire fighters often provide emergency medical services and therefore encounter the exposures common to paramedics and emergency medical technicians. Job duties are often performed in uncontrolled environments, which, due to a lack of time and other factors, do not allow for application of a complex decision-making process to the emergency at hand.

The general principles presented here have been developed from existing principles of occupational safety and health in conjunction with data from studies of health-care workers in hospital settings. The basic premise is that workers must be protected from exposure to blood and other potentially infectious body fluids in the course of their work activities. There is a paucity of data concerning the risks these worker groups face, however, which complicates development of control principles. Thus, the guidelines presented below are based on principles of prudent public health practice.

Fire and emergency medical service personnel are engaged in delivery of medical care in the prehospital setting. The following guidelines are intended to assist these personnel in making decisions concerning use of personal protective equipment and resuscitation equipment, as well as for decontamination, disinfection, and disposal procedures.

A. Personal Protective Equipment

Appropriate personal protective equipment should be made available routinely by the employer to reduce the risk of exposure as defined above. For many situations, the chance that the rescuer will be exposed to blood and other body fluids to which universal precautions apply can be determined in advance. Therefore, if the chances of being exposed to blood is high (e.g., CPR, IV insertion, trauma, delivering babies), the worker should put on protective attire before beginning patient care. Table 4 (see page 28) sets forth examples of recommendations for personal protective equipment in the prehospital setting; the list is not intended to be all-inclusive.

1. Gloves

Disposable gloves should be a standard component of emergency response equipment, and should be donned by all personnel prior to initiating any emergency patient care tasks involving exposure to blood or other body fluids to which universal precautions apply. Extra pairs should always be available. Considerations in the choice of disposable gloves should include dexterity, durability, fit, and the task being performed. Thus, there is no single type or thickness of glove appropriate for protection in all situations. For situations where large amounts of blood are likely to be encountered, it is important that gloves fit tightly at the wrist to prevent blood contamination of hands around the cuff. For multiple trauma victims, gloves should be changed between patient contacts, if the emergency situation allows.

Greater personal protective equipment measures are indicated for situations where broken glass and sharp edges are likely to be encountered, such as extricating a person from an automobile wreck. Structural fire-fighting gloves that meet the Federal OSHA requirements for fire-fighters gloves (as contained in 29 CFR 1910.156 or National Fire Protection Association Standard 1973, *Gloves for Structural Fire Fighters*) should be worn in any situation where sharp or rough surfaces are likely to be encountered (37).

While wearing gloves, avoid handling personal items, such as combs and pens, that could become soiled or contaminated. Gloves that have become contaminated with blood or other body fluids to which universal precautions apply should be removed as soon as possible, taking care to avoid skin contact with the exterior surface. Contaminated gloves should be placed and transported in bags that prevent leakage and should be disposed of or, in the case of reusable gloves, cleaned and disinfected properly.

2. Masks, eyewear, and gowns

Masks, eyewear, and gowns should be present on all emergency vehicles that respond or potentially respond to medical emergencies or victim rescues. These protective barriers should be used in accordance with the level of exposure encountered. Minor lacerations or small amounts of blood do not merit the same extent of barrier use as required for exsanguinating victims or massive arterial bleeding. Management of the patient who is not bleeding, and who has no bloody body fluids present, should not routinely require use of barrier precautions. Masks and eyewear (e.g., safety glasses) should be worn together, or a faceshield should be used by all personnel prior to any situation where splashes of blood or other body fluids to which universal precautions apply are likely to occur. Gowns or aprons should be worn to protect clothing from splashes with blood. If large splashes or quantities of blood are present or anticipated, impervious gowns or aprons should be worn. An extra change of work clothing should be available at all times.

3. Resuscitation equipment

No transmission of HBV or HIV infection during mouth-to-mouth resuscitation has been documented. However, because of the risk of salivary transmission of other infectious diseases (e.g., *Herpes simplex* and *Neisseria meningitidis*) and the theoretical risk of HIV and HBV transmission during artificial ventilation of trauma victims, disposable airway equipment or resuscitation bags should be used. Disposable resuscitation equipment and devices should be used once and disposed of or, if reusable, thoroughly cleaned and disinfected after each use according to the manufacturer's recommendations.

Mechanical respiratory assist devices (e.g., bag-valve masks, oxygen demand valve resuscitators) should be available on all emergency vehicles and to all emergency response personnel that respond or potentially respond to medical emergencies or victim rescues.

Pocket mouth-to-mouth resuscitation masks designed to isolate emergency response personnel (i.e., double lumen systems) from contact with victims' blood and blood-contaminated saliva, respiratory secretions, and vomitus should be provided to all personnel who provide or potentially provide emergency treatment.

V. Law-Enforcement and Correctional-Facility Officers

Law-enforcement and correctional-facility officers may face the risk of exposure to blood during the conduct of their duties. For example, at the crime scene or during processing of suspects, law-enforcement officers may encounter blood-contaminated hypodermic needles or weapons, or be called upon to assist with body removal. Correctional-facility officers may similarly be required to search prisoners or their cells for hypodermic needles or weapons, or subdue violent and combative inmates.

The following section presents information for reducing the risk of acquiring HIV and HBV infection by law-enforcement and correctional-facility officers as a consequence of carrying out their duties. However, there is an extremely diverse range of potential situations which may occur in the control of persons with unpredictable, violent, or psychotic behavior. Therefore, informed judgment of the individual officer is paramount when unusual circumstances or events arise. These recommendations should serve as an adjunct to rational decision making in those situations where specific guidelines do not exist, particularly where immediate action is required to preserve life or prevent significant injury.

The following guidelines are arranged into three sections: a section addressing concerns shared by both law-enforcement and correctional-facility officers, and two sections dealing separately with law-enforcement officers and correctional-facility officers, respectively. Table 4 (see page 28) contains selected examples of personal protective equipment that may be employed by law-enforcement and correctional-facility officers.

A. Law-Enforcement and Correctional-Facilities Considerations

1. Fights and assaults

Law-enforcement and correctional-facility officers are exposed to a range of assaultive and disruptive behavior through which they may potentially become exposed to blood or other body fluids containing blood. Behaviors of particular concern are biting, attacks resulting in blood exposure, and attacks with sharp objects. Such behaviors may occur in a range of law-enforcement situations including arrests, routine interrogations, domestic disputes, and lockup operations, as well as in correctional-facility activities. Hand-to-hand combat may result in bleeding and may thus incur a greater chance for blood-to-blood exposure, which increases the chances for blood-borne disease transmission.

Whenever the possibility for exposure to blood or blood-contaminated body fluids exists, the appropriate protection should be worn, if feasible under the circumstances. In all cases, extreme caution must be used in dealing with the suspect or prisoner if there is any indication of assaultive or combative behavior. When blood is present and a suspect or an inmate is combative or threatening to staff, gloves should always be put on as soon as conditions permit. In case of blood contamination of clothing, an extra change of clothing should be available at all times.

2. Cardiopulmonary resuscitation

Law-enforcement and correctional personnel are also concerned about infection with HIV and HBV through administration of cardiopulmonary resuscitation (CPR). Although there have been no documented cases of HIV transmission through this mechanism, the possibility of transmission of other infectious diseases exists. Therefore, agencies should make protective masks or airways available to officers and provide training in their proper use. Devices with one-way valves to prevent the patients' saliva or vomitus from entering the caregiver's mouth are preferable.

B. Law-Enforcement Considerations

1. Searches and evidence handling

Criminal justice personnel have potential risks of acquiring HBV or HIV infection through exposures which occur during searches and evidence handling. Penetrating injuries are known to occur, and puncture wounds or needle sticks in particular pose a hazard during searches of persons, vehicles, or cells, and during evidence handling. The following precautionary measures will help to reduce the risk of infection:

- An officer should use great caution in searching the clothing of suspects. Individual discretion, based on the circumstances at hand, should determine if a suspect or prisoner should empty his own pockets or if the officer should use his own skills in determining the contents of a suspect's clothing.
- A safe distance should always be maintained between the officer and the suspect.
- Wear protective gloves if exposure to blood is likely to be encountered.
- Wear protective gloves for all body cavity searches.
- If cotton gloves are to be worn when working with evidence of potential latent fingerprint value at the crime scene, they can be worn over protective disposable gloves when exposure to blood may occur.
- Always carry a flashlight, even during daylight shifts, to search hidden areas. Whenever possible, use long-handled mirrors and flashlights to search such areas (e.g., under car seats).
- If searching a purse, carefully empty contents directly from purse, by turning it upside down over a table.
- Use puncture-proof containers to store sharp instruments and clearly marked plastic bags to store other possibly contaminated items.
- To avoid tearing gloves, use evidence tape instead of metal staples to seal evidence.
- Local procedures for evidence handling should be followed. In general, items should be air dried before sealing in plastic.

Not all types of gloves are suitable for conducting searches. Vinyl or latex rubber gloves provide little protection against sharp instruments, and they are not puncture-proof. There is a direct trade-off between level of protection and manipulability. In other words, the thicker the gloves, the more protection they provide, but the less effective they are in locating objects. Thus, there is no single type or thickness of glove appropriate for protection in all situations. Officers should select the type and thickness of glove which provides the best balance of protection and search efficiency.

Officers and crime scene technicians may confront unusual hazards, especially when the crime scene involves violent behavior, such as a homicide where large amounts of blood are present. Protective gloves should be available and worn in this setting. In addition, for very large spills, consideration should be given to other protective clothing, such as overalls, aprons, boots, or protective shoe covers.

They should be changed if torn or soiled, and always removed prior to leaving the scene. While wearing gloves, avoid handling personal items, such as combs and pens, that could become soiled or contaminated.

Face masks and eye protection or a face shield are required for laboratory and evidence technicians whose jobs which entail potential exposures to blood via a splash to the face, mouth, nose, or eyes.

Airborne particles of dried blood may be generated when a stain is scraped. It is recommended that protective masks and eyewear or face shields be worn by laboratory or evidence technicians when removing the blood stain for laboratory analyses.

While processing the crime scene, personnel should be alert for the presence of sharp objects such as hypodermic needles, knives, razors, broken glass, nails, or other sharp objects.

2. Handling deceased persons and body removal

For detectives, investigators, evidence technicians, and others who may have to touch or remove a body, the response should be the same as for situations requiring CPR or first aid: wear gloves and cover all cuts and abrasions to create a barrier and carefully wash all exposed areas after any contact with blood. The precautions to be used with blood and deceased persons should also be used when handling amputated limbs, hands, or other body parts. Such procedures should be followed after contact with the blood of anyone, regardless of whether they are known or suspected to be infected with HIV or HBV.

3. Autopsies

Protective masks and eyewear (or face shields), laboratory coats, gloves, and waterproof aprons should be worn when performing or attending all autopsies. All autopsy material should be considered infectious for both HIV and HBV. Onlookers with an opportunity for exposure to blood splashes should be similarly protected. Instruments and surfaces contaminated during postmortem procedures should be decontaminated with an appropriate chemical germicide following recommendations in Appendix B, page 40. Many laboratories have more detailed standard operating procedures for conducting autopsies; where available, these should be followed. (More detailed recommendations for health-care workers in this setting are found in Appendix B, page 39.)

4. Forensic laboratories

Blood from all individuals should be considered infective. To supplement other worksite precautions, the following precautions are recommended for workers in forensic laboratories.

- a. All specimens of blood should be put in a well-constructed, appropriately labelled container with a secure lid to prevent leaking during transport. Care should be taken when collecting each specimen to avoid contaminating the outside of the container and of the laboratory form accompanying the specimen.
- b. All persons processing blood specimens should wear gloves. Masks and protective eyewear or face shields should be worn if mucous-membrane contact with blood is anticipated (e.g., removing tops from vacuum tubes). Hands should be washed after completion of specimen processing.

- c. For routine procedures, such as histologic and pathologic studies or microbiological culturing, a biological safety cabinet is not necessary. However, biological safety cabinets (Class I or II) should be used whenever procedures are conducted that have a high potential for generating droplets. These include activities such as blending, sonicating, and vigorous mixing.
- d. Mechanical pipetting devices should be used for manipulating all liquids in the laboratory. Mouth pipetting must not be done.
- e. Use of needles and syringes should be limited to situations in which there is no alternative, and the recommendations for preventing injuries with needles outlined under universal precautions should be followed.
- f. Laboratory work surfaces should be cleaned of visible materials and then decontaminated with an appropriate chemical germicide after a spill of blood, semen, or blood-contaminated body fluid and when work activities are completed.
- g. Contaminated materials used in laboratory tests should be decontaminated before reprocessing or be placed in bags and disposed of in accordance with institutional and local regulatory policies for disposal of infective waste.
- h. Scientific equipment that has been contaminated with blood should be cleaned and then decontaminated before being repaired in the laboratory or transported to the manufacturer.
- i. All persons should wash their hands after completing laboratory activities and should remove protective clothing before leaving the laboratory.
- j. Area posting of warning signs should be considered to remind employees of continuing hazard of infectious disease transmission in the laboratory setting.

C. Correctional-Facility Considerations

1. Searches

Penetrating injuries are known to occur in the correctional-facility setting, and puncture wounds or needle sticks in particular pose a hazard during searches of prisoners or their cells. The following precautionary measures will help to reduce the risk of infection:

- A correctional-facility officer should use great caution in searching the clothing of prisoners. Individual discretion, based on the circumstances at hand, should determine if a prisoner should empty his own pockets or if the officer should use his own skills in determining the contents of a prisoner's clothing.
- A safe distance should always be maintained between the officer and the prisoner.
- Always carry a flashlight, even during daylight shifts, to search hidden areas. Whenever possible, use long-handled mirrors and flashlights to search such areas (e.g., under commodes, bunks, and in vents in jail cells).
- Wear protective gloves if exposure to blood is likely to be encountered.

- Wear protective gloves for all body cavity searches.

Not all types of gloves are suitable for conducting searches. Vinyl or latex rubber gloves can provide little, if any, protection against sharp instruments, and they are not puncture-proof. There is a direct trade-off between level of protection and manipulability. In other words, the thicker the gloves, the more protection they provide, but the less effective they are in locating objects. Thus, there is no single type or thickness of glove appropriate for protection in all situations. Officers should select the type and thickness of glove which provides the best balance of protection and search efficiency.

2. Decontamination and disposal

Prisoners may spit at officers and throw feces; sometimes these substances have been purposefully contaminated with blood. Although there are no documented cases of HIV or HBV transmission in this manner and transmission by this route would not be expected to occur, other diseases could be transmitted. These materials should be removed with a paper towel after donning gloves, and the area then decontaminated with an appropriate germicide. Following clean-up, soiled towels and gloves should be disposed of properly.

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VII. Tables

Table 1. The Risk of HIV Infection
Following Needlestick Injury: Hypothetical Model

Prevalence of HIV Infection (A)	Probability of Infection Given Needlestick Injury with Blood Containing HIV (B)	Probability of Infection Given Random Needlestick (Unknown Serostatus) $A * B = (C)$	Probability of Infection Given 10 Random Needlesticks $1-(1-C)^{10}$	Probability of Infection Given 100 Random Needlesticks $1-(1-C)^{100}$
0.0001	0.001	0.0000001	0.000001	0.00001
0.0001	0.005	0.0000005	0.000005	0.00005
0.001	0.001	0.000001	0.00001	0.0001
0.001	0.005	0.000005	0.00005	0.0005
0.01	0.001	0.00001	0.0001	0.001
0.01*	0.005	0.00005	0.0005	0.005
0.05	0.001	0.00005	0.0005	0.005
0.05	0.005	0.00025	0.0025	0.025

* For example, if the prevalence of infection in the population is 0.01 (i.e., 1 per 100) and the risk of a seroconversion following a needlestick with blood known to contain HIV is 0.005 (i.e., 1 in 200), then the probability of HIV infection given a random needlestick is 0.00005 (i.e., 5 in 100,000). If an individual sustains 10 needlestick injuries, the probability of acquiring HIV infection is 0.0005 (i.e., 1 in 2,000); if the individual sustains 100 needlestick injuries, the probability of acquiring HIV infection is 0.005 (i.e., 1 in 200).

Table 2.
HIV-infected health-care workers with no reported nonoccupational
risk factors and for whom case histories have been
published in the scientific literature
Cases with Documented Seroconversion

Case	Occupation	Country	Type of Exposure	Source
1*	NS†	United States	Needlestick	AIDS patient
2	NS	United States	Needlestick	AIDS patient
3	NS	United States	Needlestick	AIDS patient
4	NS	United States	2 Needlesticks	AIDS patient, HIV-infected patient
5	NS	United States	Needlestick	AIDS patient
6	Nurse	England	Needlestick	AIDS patient
7	Nurse	France	Needlestick	HIV-infected patient
8	Nurse	Martinique	Needlestick	AIDS patient
9	Research lab worker	United States	Cut with sharp object	Concentrated virus
10	Home health- care worker	United States	Cutaneous#	AIDS patient
11	NS	United States	Nonintact skin	AIDS patient
12	Phlebotomist	United States	Mucous-membrane	HIV-infected patient
13	Technologist	United States	Nonintact skin	HIV-infected patient
14	NS	United States	Needlestick	AIDS patient
15	Nurse	Italy	Mucous membrane	HIV-infected patient
16	Nurse	France	Needlestick	AIDS patient
17	Navy medic	United States	Needlestick	AIDS patient
18	Clinical lab worker	United States	Cut with sharp object	AIDS patient

* AIDS case

† Not specified

Mother who provided nursing care for her child with HIV infection; extensive contact with the child's blood and body secretions and excretions occurred; the mother did not wear gloves and often did not wash her hands immediately after exposure.

Table 2, continued.
HIV-infected health-care workers with no reported nonoccupational
risk factors and for whom case histories have been published
in the scientific literature

Cases without Documented Seroconversion

Case	Occupation	Country	Type of Exposure	Source
1	NS	United States	Puncture wound	AIDS patient
2	NS	United States	2 Needlesticks	2 AIDS patients
3	Research lab worker	United States	Nonintact skin	Concentrated virus
4	Home health- care provider	England	Nonintact skin	AIDS patient
5	Dentist	United States	Multiple needle- sticks	Unknown
6*	Technician	Mexico	Multiple needle- sticks and mucous-membrane	Unknown
7	Lab worker	United States	Needlestick, puncture wound	Unknown

* AIDS case

Table 3. Summary of Task Categorization and Implications for Personal Protective Equipment

<u>Joint Advisory Notice Category¹</u>	<u>Nature of Task/Activity</u>	<u>Personal protective equipment should be:</u>	
		<u>Available?</u>	<u>Worn?</u>
I.	Direct contact with blood or other body fluids to which universal precautions apply	Yes	Yes
II.	Activity performed without blood exposure but exposure may occur in emergency	Yes	No
III.	Task/activity does not entail predictable or unpredictable exposure to blood	No	No

¹ U.S. Department of Labor, U.S. Department of Health and Human Services. Joint advisory notice: protection against occupational exposure to hepatitis B virus (HBV) and human immunodeficiency virus (HIV). Washington, DC: US Department of Labor, US Department of Health and Human Services, 1987.

Table 4. Examples of Recommended Personal Protective Equipment for Worker Protection Against HIV and HBV Transmission¹ in Prehospital² Settings

<u>Task or Activity</u>	<u>Disposable Gloves</u>	<u>Gown</u>	<u>Mask³</u>	<u>Protective Eyewear</u>
Bleeding control with with spurting blood	Yes	Yes	Yes	Yes
Bleeding control with minimal bleeding	Yes	No	No	No
Emergency childbirth	Yes	Yes	Yes, if splashing is likely	Yes, if splashing is likely
Blood drawing	At certain times ⁴	No	No	No
Starting an intravenous (IV) line	Yes	No	No	No
Endotracheal intubation, esophageal obturator use	Yes	No	No, unless splashing is likely	No, unless splashing is likely
Oral/nasal suctioning, manually cleaning airway	Yes ⁵	No	No, unless splashing is likely	No, unless splashing is likely
Handling and cleaning instruments with microbial contamination	Yes	No, unless soiling is likely	No	No
Measuring blood pressure	No	No	No	No
Measuring temperature	No	No	No	No
Giving an injection	No	No	No	No

¹The examples provided in this table are based on application of universal precautions. Universal precautions are intended to supplement rather than replace recommendations for routine infection control, such as handwashing and using gloves to prevent gross microbial contamination of hands (e.g., contact with urine or feces).

²Defined as setting where delivery of emergency health care takes place away from a hospital or other health-care facility.

³Refers to protective masks to prevent exposure of mucous membranes to blood or other potentially contaminated body fluids. The use of resuscitation devices, some of which are also referred to as "masks," is discussed on page 16.

⁴For clarification see Appendix A, page 33, and Appendix B, page 38.

⁵While not clearly necessary to prevent HIV or HBV transmission unless blood is present, gloves are recommended to prevent transmission of other agents (e.g., *Herpes simplex*).

Table 5. Reprocessing Methods for Equipment Used in the Prehospital¹ Health-Care Setting

Sterilization:	Destroys:	All forms of microbial life including high numbers of bacterial spores.
	Methods:	Steam under pressure (autoclave), gas (ethylene oxide), dry heat, or immersion in EPA-approved chemical "sterilant" for prolonged period of time, e.g., 6–10 hours or according to manufacturers' instructions. Note: liquid chemical "sterilants" should be used only on those instruments that are impossible to sterilize or disinfect with heat.
	Use:	For those instruments or devices that penetrate skin or contact normally sterile areas of the body, e.g., scalpels, needles, etc. Disposable invasive equipment eliminates the need to reprocess these types of items. When indicated, however, arrangements should be made with a health-care facility for reprocessing of reusable invasive instruments.
High-Level Disinfection:	Destroys:	All forms of microbial life except high numbers of bacterial spores.
	Methods:	Hot water pasteurization (80–100 C, 30 minutes) or exposure to an EPA-registered "sterilant" chemical as above, except for a short exposure time (10–45 minutes or as directed by the manufacturer).
	Use:	For reusable instruments or devices that come into contact with mucous membranes (e.g., laryngoscope blades, endotracheal tubes, etc.).
Intermediate-Level Disinfection:	Destroys:	<i>Mycobacterium tuberculosis</i> , vegetative bacteria, most viruses, and most fungi, but does not kill bacterial spores.
	Methods:	EPA-registered "hospital disinfectant" chemical germicides that have a label claim for tuberculocidal activity; commercially available hard-surface germicides or solutions containing at least 500 ppm free available chlorine (a 1:100 dilution of common household bleach – approximately ¼ cup bleach per gallon of tap water).
	Use:	For those surfaces that come into contact only with intact skin, e.g., stethoscopes, blood pressure cuffs, splints, etc., and have been visibly contaminated with blood or bloody body fluids. Surfaces must be precleaned of visible material before the germicidal chemical is applied for disinfection.

Low-Level Disinfection:

Destroys:	Most bacteria, some viruses, some fungi, but not <i>Mycobacterium tuberculosis</i> or bacterial spores.
Methods:	EPA-registered "hospital disinfectants" (no label claim for tuberculocidal activity).
Use:	These agents are excellent cleaners and can be used for routine housekeeping or removal of soiling in the absence of visible blood contamination.

Environmental Disinfection:

Environmental surfaces which have become soiled should be cleaned and disinfected using any cleaner or disinfectant agent which is intended for environmental use. Such surfaces include floors, woodwork, ambulance seats, countertops, etc.

IMPORTANT:

To assure the effectiveness of any sterilization or disinfection process, equipment and instruments must first be thoroughly cleaned of all visible soil.

¹Defined as setting where delivery of emergency health-care takes place prior to arrival at hospital or other health-care facility.

Appendix A. Update: Universal Precautions for Prevention of Transmission of Human Immunodeficiency Virus, Hepatitis B Virus, and Other Bloodborne Pathogens in Health-Care Settings (Reprinted from Morbidity and Mortality Weekly Report, 1988; 37:377-382,387,388.)

Introduction

The purpose of this report is to clarify and supplement the CDC publication entitled "Recommendations for Prevention of HIV Transmission in Health-Care Settings" (1).*

In 1983, CDC published a document entitled "Guideline for Isolation Precautions in Hospitals" (2) that contained a section entitled "Blood and Body Fluid Precautions." The recommendations in this section called for blood and body fluid precautions when a patient was known or suspected to be infected with bloodborne pathogens. In August 1987, CDC published a document entitled "Recommendations for Prevention of HIV Transmission in Health-Care Settings" (1). In contrast to the 1983 document, the 1987 document recommended that blood and body fluid precautions be consistently used for all patients regardless of their bloodborne infection status. This extension of blood and body fluid precautions to all patients is referred to as "Universal Blood and Body Fluid Precautions" or "Universal Precautions." Under universal precautions, blood and certain body fluids of all patients are considered potentially infectious for human immunodeficiency virus (HIV), hepatitis B virus (HBV), and other bloodborne pathogens.

Universal precautions are intended to prevent parenteral, mucous membrane, and nonintact skin exposures of health-care workers to bloodborne pathogens. In addition, immunization with HBV vaccine is recommended as an important adjunct to universal precautions for health-care workers who have exposures to blood (3,4).

Since the recommendations for universal precautions were published in August 1987, CDC and the Food and Drug Administration (FDA) have received requests for clarification of the following issues: 1) body fluids to which universal precautions apply, 2) use of protective barriers, 3) use of gloves for phlebotomy, 4) selection of gloves for use while observing universal precautions, and 5) need for making changes in waste management programs as a result of adopting universal precautions.

Body Fluids to Which Universal Precautions Apply

Universal precautions apply to blood and to other body fluids containing visible blood. Occupational transmission of HIV and HBV to health-care workers by blood is documented (4,5). Blood is the single most important source of HIV, HBV, and other bloodborne pathogens in the occupational setting. Infection control efforts for HIV, HBV, and other bloodborne pathogens must focus on preventing exposures to blood as well as on delivery of HBV immunization.

Universal precautions also apply to semen and vaginal secretions. Although both of these fluids have been implicated in the sexual transmission of HIV and HBV, they have not been implicated in occupational transmission from patient to health-care worker. This observation is not unexpected, since exposure to semen in the usual health-care setting is limited, and the routine practice of wearing gloves for performing vaginal examinations protects health-care workers from exposure to potentially infectious vaginal secretions.

Universal precautions also apply to tissues and to the following fluids: cerebrospinal fluid (CSF), synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, and amniotic fluid. The risk of transmission of HIV and HBV from these fluids is unknown; epidemiologic studies in the health-care and community setting are currently inadequate to assess the potential risk to health-care workers from occupational exposures to them. However, HIV has been isolated from CSF, synovial, and amniotic fluid (6-8), and HBsAg has been detected in synovial fluid, amniotic fluid, and peritoneal fluid (9-11). One case of HIV transmission was reported after a percutaneous exposure to bloody pleural fluid obtained by needle aspiration (12). Whereas aseptic procedures used to obtain these fluids for diagnostic or therapeutic purposes protect health-care workers from skin exposures, they cannot prevent penetrating injuries due to contaminated needles or other sharp instruments.

Body Fluids to Which Universal Precautions Do Not Apply

Universal precautions do not apply to feces, nasal secretions, sputum, sweat, tears, urine, and vomitus unless they contain visible blood. The risk of transmission of HIV and HBV from these fluids and materials is extremely low or nonexistent. HIV has been isolated and HBsAg has been demonstrated in some of these fluids; however, epidemiologic studies in the health-care and community setting have not implicated these fluids or materials in the transmission of HIV and HBV infections (13,14). Some of the above fluids and excretions

* The August 1987 publication should be consulted for general information and specific recommendations not addressed in this update.

represent a potential source for nosocomial and community-acquired infections with other pathogens, and recommendations for preventing the transmission of non-bloodborne pathogens have been published (2).

Precautions for Other Body Fluids in Special Settings

Human breast milk has been implicated in perinatal transmission of HIV, and HBsAg has been found in the milk of mothers infected with HBV (10,13). However, occupational exposure to human breast milk has not been implicated in the transmission of HIV nor HBV infection to health-care workers. Moreover, the health-care worker will not have the same type of intensive exposure to breast milk as the nursing neonate. Whereas universal precautions do not apply to human breast milk, gloves may be worn by health-care workers in situations where exposures to breast milk might be frequent, for example, in breast milk banking.

Saliva of some persons infected with HBV has been shown to contain HBV-DNA at concentrations 1/1,000 to 1/10,000 of that found in the infected person's serum (15). HbsAg-positive saliva has been shown to be infectious when injected into experimental animals and in human bite exposures (16-18). However, HBsAg-positive saliva has not been shown to be infectious when applied to oral mucous membranes in experimental primate studies (18) or through contamination of musical instruments or cardiopulmonary resuscitation dummies used by HBV carriers (19,20). Epidemiologic studies of nonsexual household contacts of HIV-infected patients, including several small series in which HIV transmission failed to occur after bites or after percutaneous inoculation or contamination of cuts and open wounds with saliva from HIV-infected patients, suggest that the potential for salivary transmission of HIV is remote (5,13,14,21,22). One case report from Germany has suggested the possibility of transmission of HIV in a household setting from an infected child to a sibling through a human bite (23). The bite did not break the skin or result in bleeding. Since the date of seroconversion to HIV was not known for either child in this case, evidence for the role of saliva in the transmission of virus is unclear (23). Another case report suggested the possibility of transmission of HIV from husband to wife by contact with saliva during kissing (24). However, follow-up studies did not confirm HIV infection in the wife (21).

Universal precautions do not apply to saliva. General infection control practices already in existence—including the use of gloves for digital examination of mucous membranes and endotracheal suctioning, and handwashing after exposure to saliva—should further minimize the minute risk, if any, for salivary transmission of HIV and HBV (1,25). Gloves need not be worn when feeding patients and when wiping saliva from the skin.

Special precautions, however, are recommended for dentistry (1). Occupationally acquired infection with HBV in dental workers has been documented (4), and two possible cases of occupationally acquired HIV infection involving dentists have been reported (5,26). During dental procedures, contamination of saliva with blood is predictable, trauma to health-care workers' hands is common, and blood spattering may occur. Infection control precautions for dentistry minimize the potential for nonintact skin and mucous membrane contact of dental health-care workers to blood-contaminated saliva of patients. In addition, the use of gloves for oral examinations and treatment in the dental setting may also protect the patient's oral mucous membranes from exposures to blood, which may occur from breaks in the skin of dental workers' hands.

Use of Protective Barriers

Protective barriers reduce the risk of exposure of the health-care worker's skin or mucous membranes to potentially infective materials. For universal precautions, protective barriers reduce the risk of exposure to blood, body fluids containing visible blood, and other fluids to which universal precautions apply. Examples of protective barriers include gloves, gowns, masks, and protective eyewear. Gloves should reduce the incidence of contamination of hands, but they cannot prevent penetrating injuries due to needles or other sharp instruments. Masks and protective eyewear or face shields should reduce the incidence of contamination of mucous membranes of the mouth, nose, and eyes.

Universal precautions are intended to supplement rather than replace recommendations for routine infection control, such as handwashing and using gloves to prevent gross microbial contamination of hands (27). Because specifying the types of barriers needed for every possible clinical situation is impractical, some judgment must be exercised.

The risk of nosocomial transmission of HIV, HBV, and other bloodborne pathogens can be minimized if health-care workers use the following general guidelines:

1. Take care to prevent injuries when using needles, scalpels, and other sharp instruments or devices; when handling sharp instruments after procedures; when cleaning used instruments; and when disposing of used needles. Do not recap used needles by hand; do not remove used needles from disposable syringes by hand; and do not bend, break, or otherwise

* The August 1987 publication should be consulted for general information and specific recommendations not addressed in this update.

manipulate used needles by hand. Place used disposable syringes and needles, scalpel blades, and other sharp items in puncture-resistant containers for disposal. Locate the puncture-resistant containers as close to the use area as is practical.

2. Use protective barriers to prevent exposure to blood, body fluids containing visible blood, and other fluids to which universal precautions apply. The type of protective barrier(s) should be appropriate for the procedure being performed and the type of exposure anticipated.
3. Immediately and thoroughly wash hands and other skin surfaces that are contaminated with blood, body fluids containing visible blood, or other body fluids to which universal precautions apply.

Glove Use for Phlebotomy

Gloves should reduce the incidence of blood contamination of hands during phlebotomy (drawing blood samples), but they cannot prevent penetrating injuries caused by needles or other sharp instruments. The likelihood of hand contamination with blood containing HIV, HBV, or other bloodborne pathogens during phlebotomy depends on several factors: 1) the skill and technique of the health-care worker, 2) the frequency with which the health-care worker performs the procedure (other factors being equal, the cumulative risk of blood exposure is higher for a health-care worker who performs more procedures), 3) whether the procedure occurs in a routine or emergency situation (where blood contact may be more likely), and 4) the prevalence of infection with bloodborne pathogens in the patient population. The likelihood of infection after skin exposure to blood containing HIV or HBV will depend on the concentration of virus (viral concentration is much higher for hepatitis B than for HIV), the duration of contact, the presence of skin lesions on the hands of the health-care worker, and—for HBV—the immune status of the health-care worker. Although not accurately quantified, the risk of HIV infection following intact skin contact with infective blood is certainly much less than the 0.5% risk following percutaneous needlestick exposures (5). In universal precautions, all blood is assumed to be potentially infective for bloodborne pathogens, but in certain settings (e.g., volunteer blood-donation centers) the prevalence of infection with some bloodborne pathogens (e.g., HIV, HBV) is known to be very low. Some institutions have relaxed recommendations for using gloves for phlebotomy procedures by skilled phlebotomists in settings where the prevalence of bloodborne pathogens is known to be very low.

Institutions that judge that routine gloving for all phlebotomies is not necessary should periodically reevaluate their policy. Gloves should always be available to health-care workers who wish to use them for phlebotomy. In addition, the following general guidelines apply:

1. Use gloves for performing phlebotomy when the health-care worker has cuts, scratches, or other breaks in his/her skin.
2. Use gloves in situations where the health-care worker judges that hand contamination with blood may occur, for example, when performing phlebotomy on an uncooperative patient.
3. Use gloves for performing finger and/or heel sticks on infants and children.
4. Use gloves when persons are receiving training in phlebotomy.

Selection of Gloves

The Center for Devices and Radiological Health, FDA, has responsibility for regulating the medical glove industry. Medical gloves include those marketed as sterile surgical or nonsterile examination gloves made of vinyl or latex. General purpose utility ("rubber") gloves are also used in the health-care setting, but they are not regulated by FDA since they are not promoted for medical use. There are no reported differences in barrier effectiveness between intact latex and intact vinyl used to manufacture gloves. Thus, the type of gloves selected should be appropriate for the task being performed.

The following general guidelines are recommended:

1. Use sterile gloves for procedures involving contact with normally sterile areas of the body.
2. Use examination gloves for procedures involving contact with mucous membranes, unless otherwise indicated, and for other patient care or diagnostic procedures that do not require the use of sterile gloves.
3. Change gloves between patient contacts.
4. Do not wash or disinfect surgical or examination gloves for reuse. Washing with surfactants may cause "wicking," i.e., the enhanced penetration of liquids through undetected holes in the glove. Disinfecting agents may cause deterioration.

5. Use general-purpose utility gloves (e.g., rubber household gloves) for housekeeping chores involving potential blood contact and for instrument cleaning and decontamination procedures. Utility gloves may be decontaminated and reused but should be discarded if they are peeling, cracked, or discolored, or if they have punctures, tears, or other evidence of deterioration.

Waste Management

Universal precautions are not intended to change waste management programs previously recommended by CDC for health-care settings (1). Policies for defining, collecting, storing, decontaminating, and disposing of infective waste are generally determined by institutions in accordance with state and local regulations. Information regarding waste management regulations in health-care settings may be obtained from state or local health departments or agencies responsible for waste management.

Reported by: Center for Devices and Radiological Health, Food and Drug Administration. Hospital Infections Program, AIDS Program, and Hepatitis Br, Div of Viral Diseases, Center for Infectious Diseases, National Institute for Occupational Safety and Health, CDC.

Editorial Note: Implementation of universal precautions does not eliminate the need for other category- or disease-specific isolation precautions, such as enteric precautions for infectious diarrhea or isolation for pulmonary tuberculosis (1,2). In addition to universal precautions, detailed precautions have been developed for the following procedures and/or settings in which prolonged or intensive exposures to blood occur: invasive procedures, dentistry, autopsies or morticians' services, dialysis, and the clinical laboratory. These detailed precautions are found in the August 21, 1987, "Recommendations for Prevention of HIV Transmission in Health-Care Settings" (1). In addition, specific precautions have been developed for research laboratories (28).

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Appendix B. Recommendations for Prevention of HIV Transmission in Health-Care Settings (Reprinted from Morbidity and Mortality Weekly Report 1987; 36 [no. 2S].)

Introduction

Human immunodeficiency virus (HIV), the virus that causes acquired immunodeficiency syndrome (AIDS), is transmitted through sexual contact and exposure to infected blood or blood components and perinatally from mother to neonate. HIV has been isolated from blood, semen, vaginal secretions, saliva, tears, breast milk, cerebrospinal fluid, amniotic fluid, and urine and is likely to be isolated from other body fluids, secretions, and excretions. However, epidemiologic evidence has implicated only blood, semen, vaginal secretions, and possibly breast milk in transmission.

The increasing prevalence of HIV increases the risk that health-care workers will be exposed to blood from patients infected with HIV, especially when blood and body-fluid precautions are not followed for all patients. Thus, this document emphasizes the need for health-care workers to consider all patients as potentially infected with HIV and/or other blood-borne pathogens and to adhere rigorously to infection-control precautions for minimizing the risk of exposure to blood and body fluids of all patients.

The recommendations contained in this document consolidate and update CDC recommendations published earlier for preventing HIV transmission in health-care settings: precautions for clinical and laboratory staffs (1) and precautions for health-care workers and allied professionals (2); recommendations for preventing HIV transmission in the workplace (3) and during invasive procedures (4); recommendations for preventing possible transmission of HIV from tears (5); and recommendations for providing dialysis treatment for HIV-infected patients (6). These recommendations also update portions of the "Guideline for Isolation Precautions in Hospitals" (7) and reemphasize some of the recommendations contained in "Infection Control Practices for Dentistry" (8). The recommendations contained in this document have been developed for use in health-care settings and emphasize the need to treat blood and other body fluids from all patients as potentially infective. These same prudent precautions also should be taken in other settings in which persons may be exposed to blood or other body fluids.

Definition of Health-Care Workers

Health-care workers are defined as persons, including students and trainees, whose activities involve contact with patients or with blood or other body fluids from patients in a health-care setting.

Health-Care Workers with AIDS

As of July 10, 1987, a total of 1,875 (5.8%) of 32,395 adults with AIDS, who had been reported to the CDC national surveillance system and for whom occupational information was available, reported being employed in a health-care or clinical laboratory setting. In comparison, 6.8 million persons—representing 5.6% of the U.S. labor force—were employed in health services. Of the health-care workers with AIDS, 95% have been reported to exhibit high-risk behavior; for the remaining 5%, the means of HIV acquisition was undetermined. Health-care workers with AIDS were significantly more likely than other workers to have an undetermined risk (5% versus 3%, respectively). For both health-care and non-health-care workers with AIDS, the proportion with an undetermined risk has not increased since 1982.

AIDS patients initially reported as not belonging to recognized risk groups are investigated by state and local health departments to determine whether possible risk factors exist. Of all health-care workers with AIDS reported to CDC who were initially characterized as not having an identified risk and for whom follow-up information was available, 66% have been reclassified because risk factors were identified or because the patient was found not to meet the surveillance case definition for AIDS. Of the 87 health-care workers currently categorized as having no identifiable risk, information is incomplete on 16 (18%) because of death or refusal to be interviewed; 38 (44%) are still being investigated. The remaining 33 (38%) health-care workers were interviewed or had other follow-up information available. The occupations of these 33 were as follows: five physicians (15%), three of whom were surgeons; one dentist (3%); three nurses (9%); nine nursing assistants (27%); seven housekeeping or maintenance workers (21%); three clinical laboratory technicians (9%); one therapist (3%); and four others who did not have contact with patients (12%). Although 15 of these 33 health-care workers reported parenteral and/or other non-needlestick exposure to blood or body fluids from patients in the 10 years preceding their diagnosis of AIDS, none of these exposures involved a patient with AIDS or known HIV infection.

Risk to Health-Care Workers of Acquiring HIV in Health-Care Settings

Health-care workers with documented percutaneous or mucous-membrane exposures to blood or body fluids of HIV-infected patients have been prospectively evaluated to determine the risk of infection after such exposures. As of June 30, 1987, 883 health-care workers have been tested for antibody to HIV in an ongoing surveillance project conducted by CDC (9). Of these, 708 (80%) had percutaneous exposures to blood, and 175 (20%) had a mucous membrane or an open wound contaminated by blood or body fluid. Of 396 health-

care workers, each of whom had only a convalescent-phase serum sample obtained and tested ≥ 90 days postexposure, one—for whom heterosexual transmission could not be ruled out—was seropositive for HIV antibody. For 425 additional health-care workers, both acute- and convalescent-phase serum samples were obtained and tested; none of 74 health-care workers with nonpercutaneous exposures seroconverted, and three (0.9%) of 351 with percutaneous exposures seroconverted. None of these three health-care workers had other documented risk factors for infection.

Two other prospective studies to assess the risk of nosocomial acquisition of HIV infection for health-care workers are ongoing in the United States. As of April 30, 1987, 332 health-care workers with a total of 453 needlestick or mucous-membrane exposures to the blood or other body fluids of HIV-infected patients were tested for HIV antibody at the National Institutes of Health (10). These exposed workers included 103 with needlestick injuries and 229 with mucous-membrane exposures; none had seroconverted. A similar study at the University of California of 129 health-care workers with documented needlestick injuries or mucous-membrane exposures to blood or other body fluids from patients with HIV infection has not identified any seroconversions (11). Results of a prospective study in the United Kingdom identified no evidence of transmission among 150 health-care workers with parenteral or mucous-membrane exposures to blood or other body fluids, secretions, or excretions from patients with HIV infection (12).

In addition to health-care workers enrolled in prospective studies, eight persons who provided care to infected patients and denied other risk factors have been reported to have acquired HIV infection. Three of these health-care workers had needlestick exposures to blood from infected patients (13–15). Two were persons who provided nursing care to infected persons; although neither sustained a needlestick, both had extensive contact with blood or other body fluids, and neither observed recommended barrier precautions (16,17). The other three were health-care workers with non-needlestick exposures to blood from infected patients (18). Although the exact route of transmission for these last three infections is not known, all three persons had direct contact of their skin with blood from infected patients, all had skin lesions that may have been contaminated by blood, and one also had a mucous-membrane exposure.

A total of 1,231 dentists and hygienists, many of whom practiced in areas with many AIDS cases, participated in a study to determine the prevalence of antibody to HIV; one dentist (0.1%) had HIV antibody. Although no exposure to a known HIV-infected person could be documented, epidemiologic investigation did not identify any other risk factor for infection. The infected dentist, who also had a history of sustaining needlestick injuries and trauma to his hands, did not routinely wear gloves when providing dental care (19).

Precautions To Prevent Transmission of HIV

Universal Precautions

Since medical history and examination cannot reliably identify all patients infected with HIV or other blood-borne pathogens, blood and body-fluid precautions should be consistently used for all patients. This approach, previously recommended by CDC (3,4), and referred to as “universal blood and body-fluid precautions” or “universal precautions,” should be used in the care of all patients, especially including those in emergency-care settings in which the risk of blood exposure is increased and the infection status of the patient is usually unknown (20).

1. All health-care workers should routinely use appropriate barrier precautions to prevent skin and mucous-membrane exposure when contact with blood or other body fluids of any patient is anticipated. Gloves should be worn for touching blood and body fluids, mucous membranes, or non-intact skin of all patients, for handling items or surfaces soiled with blood or body fluids, and for performing venipuncture and other vascular access procedures. Gloves should be changed after contact with each patient. Masks and protective eyewear or face shields should be worn during procedures that are likely to generate droplets of blood or other body fluids to prevent exposure of mucous membranes of the mouth, nose, and eyes. Gowns or aprons should be worn during procedures that are likely to generate splashes of blood or other body fluids.
2. Hands and other skin surfaces should be washed immediately and thoroughly if contaminated with blood or other body fluids. Hands should be washed immediately after gloves are removed.
3. All health-care workers should take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices during procedures; when cleaning used instruments; during disposal of used needles; and when handling sharp instruments after procedures. To prevent needlestick injuries, needles should not be recapped, purposely bent or broken by hand, removed from disposable syringes, or otherwise manipulated by hand. After they are used, disposable syringes and needles, scalpel blades, and other sharp items should be placed in puncture-resistant containers for disposal; the puncture-resistant containers should be located as close as practical to the use area. Large-bore reusable needles should be placed in a puncture-resistant container for transport to the reprocessing area.
4. Although saliva has not been implicated in HIV transmission, to minimize the need for emergency mouth-to-mouth resuscitation, mouthpieces, resuscitation bags, or other ventilation devices should be available for use in areas in which the need for resuscitation is predictable.

5. Health-care workers who have exudative lesions or weeping dermatitis should refrain from all direct patient care and from handling patient-care equipment until the condition resolves.
6. Pregnant health-care workers are not known to be at greater risk of contracting HIV infection than health-care workers who are not pregnant; however, if a health-care worker develops HIV infection during pregnancy, the infant is at risk of infection resulting from perinatal transmission. Because of this risk, pregnant health-care workers should be especially familiar with and strictly adhere to precautions to minimize the risk of HIV transmission.

Implementation of universal blood and body-fluid precautions for all patients eliminates the need for use of the isolation category of "Blood and Body Fluid Precautions" previously recommended by CDC (7) for patients known or suspected to be infected with blood-borne pathogens. Isolation precautions (e.g., enteric, "AFB" [7]) should be used as necessary if associated conditions, such as infectious diarrhea or tuberculosis, are diagnosed or suspected.

Precautions for Invasive Procedures

In this document, an invasive procedure is defined as surgical entry into tissues, cavities, or organs or repair of major traumatic injuries 1) in an operating or delivery room, emergency department, or outpatient setting, including both physicians' and dentists' offices; 2) cardiac catheterization and angiographic procedures; 3) a vaginal or cesarean delivery or other invasive obstetric procedure during which bleeding may occur; or 4) the manipulation, cutting, or removal of any oral or perioral tissues, including tooth structure, during which bleeding occurs or the potential for bleeding exists. The universal blood and body-fluid precautions listed above, combined with the precautions listed below, should be the minimum precautions for all such invasive procedures.

1. All health-care workers who participate in invasive procedures must routinely use appropriate barrier precautions to prevent skin and mucous-membrane contact with blood and other body fluids of all patients. Gloves and surgical masks must be worn for all invasive procedures. Protective eyewear or face shields should be worn for procedures that commonly result in the generation of droplets, splashing of blood or other body fluids, or the generation of bone chips. Gowns or aprons made of materials that provide an effective barrier should be worn during invasive procedures that are likely to result in the splashing of blood or other body fluids. All health-care workers who perform or assist in vaginal or cesarean deliveries should wear gloves and gowns when handling the placenta or the infant until blood and amniotic fluid have been removed from the infant's skin and should wear gloves during post-delivery care of the umbilical cord.
2. If a glove is torn or a needlestick or other injury occurs, the glove should be removed and a new glove used as promptly as patient safety permits; the needle or instrument involved in the incident should also be removed from the sterile field.

Precautions for Dentistry*

Blood, saliva, and gingival fluid from all dental patients should be considered infective. Special emphasis should be placed on the following precautions for preventing transmission of blood-borne pathogens in dental practice in both institutional and non-institutional settings.

1. In addition to wearing gloves for contact with oral mucous membranes of all patients, all dental workers should wear surgical masks and protective eyewear or chin-length plastic face shields during dental procedures in which splashing or spattering of blood, saliva, or gingival fluids is likely. Rubber dams, high-speed evacuation, and proper patient positioning, when appropriate, should be utilized to minimize generation of droplets and spatter.
2. Handpieces should be sterilized after use with each patient, since blood, saliva, or gingival fluid of patients may be aspirated into the handpiece or waterline. Handpieces that cannot be sterilized should at least be flushed, the outside surface cleaned and wiped with a suitable chemical germicide, and then rinsed. Handpieces should be flushed at the beginning of the day and after use with each patient. Manufacturers' recommendations should be followed for use and maintenance of waterlines and check valves and for flushing of handpieces. The same precautions should be used for ultrasonic scalers and air/water syringes.
3. Blood and saliva should be thoroughly and carefully cleaned from material that has been used in the mouth (e.g., impression materials, bite registration), especially before polishing and grinding intra-oral devices. Contaminated materials, impressions, and intra-oral devices should also be cleaned and disinfected before being handled in the dental laboratory and before they are placed in the patient's mouth. Because of the increasing variety of dental materials used intra-orally, dental workers should consult with manufacturers as to the stability of specific materials when using disinfection procedures.

* General infection-control precautions are more specifically addressed in previous recommendations for infection-control practices for dentistry (8).

4. Dental equipment and surfaces that are difficult to disinfect (e.g., light handles or X-ray-unit heads) and that may become contaminated should be wrapped with impervious-backed paper, aluminum foil, or clear plastic wrap. The coverings should be removed and discarded, and clean coverings should be put in place after use with each patient.

Precautions for Autopsies or Morticians' Services

In addition to the universal blood and body-fluid precautions listed above, the following precautions should be used by persons performing postmortem procedures:

1. All persons performing or assisting in postmortem procedures should wear gloves, masks, protective eyewear, gowns, and waterproof aprons.
2. Instruments and surfaces contaminated during postmortem procedures should be decontaminated with an appropriate chemical germicide.

Precautions for Dialysis

Patients with end-stage renal disease who are undergoing maintenance dialysis and who have HIV infection can be dialyzed in hospital-based or free-standing dialysis units using conventional infection-control precautions (21). Universal blood and body-fluid precautions should be used when dialyzing all patients.

Strategies for disinfecting the dialysis fluid pathways of the hemodialysis machine are targeted to control bacterial contamination and generally consist of using 500–750 parts per million (ppm) of sodium hypochlorite (household bleach) for 30–40 minutes or 1.5%–2.0% formaldehyde overnight. In addition, several chemical germicides formulated to disinfect dialysis machines are commercially available. None of these protocols or procedures need to be changed for dialyzing patients infected with HIV.

Patients infected with HIV can be dialyzed by either hemodialysis or peritoneal dialysis and do not need to be isolated from other patients. The type of dialysis treatment (i.e., hemodialysis or peritoneal dialysis) should be based on the needs of the patient. The dialyzer may be discarded after each use. Alternatively, centers that reuse dialyzers—i.e., a specific single-use dialyzer is issued to a specific patient, removed, cleaned, disinfected, and reused several times on the same patient only—may include HIV-infected patients in the dialyzer-reuse program. An individual dialyzer must never be used on more than one patient.

Precautions for Laboratories*

Blood and other body fluids from all patients should be considered infective. To supplement the universal blood and body-fluid precautions listed above, the following precautions are recommended for health-care workers in clinical laboratories.

1. All specimens of blood and body fluids should be put in a well-constructed container with a secure lid to prevent leaking during transport. Care should be taken when collecting each specimen to avoid contaminating the outside of the container and of the laboratory form accompanying the specimen.
2. All persons processing blood and body-fluid specimens (e.g., removing tops from vacuum tubes) should wear gloves. Masks and protective eyewear should be worn if mucous-membrane contact with blood or body fluids is anticipated. Gloves should be changed and hands washed after completion of specimen processing.
3. For routine procedures, such as histologic and pathologic studies or microbiologic culturing, a biological safety cabinet is not necessary. However, biological safety cabinets (Class I or II) should be used whenever procedures are conducted that have a high potential for generating droplets. These include activities such as blending, sonicating, and vigorous mixing.
4. Mechanical pipetting devices should be used for manipulating all liquids in the laboratory. Mouth pipetting must not be done.
5. Use of needles and syringes should be limited to situations in which there is no alternative, and the recommendations for preventing injuries with needles outlined under universal precautions should be followed.
6. Laboratory work surfaces should be decontaminated with an appropriate chemical germicide after a spill of blood or other body fluids and when work activities are completed.

* Additional precautions for research and industrial laboratories are addressed elsewhere (22,23).

7. Contaminated materials used in laboratory tests should be decontaminated before reprocessing or be placed in bags and disposed of in accordance with institutional policies for disposal of infective waste (24).
8. Scientific equipment that has been contaminated with blood or other body fluids should be decontaminated and cleaned before being repaired in the laboratory or transported to the manufacturer.
9. All persons should wash their hands after completing laboratory activities and should remove protective clothing before leaving the laboratory.

Implementation of universal blood and body-fluid precautions for all patients eliminates the need for warning labels on specimens since blood and other body fluids from all patients should be considered infective.

Environmental Considerations for HIV Transmission

No environmentally mediated mode of HIV transmission has been documented. Nevertheless, the precautions described below should be taken routinely in the care of all patients.

Sterilization and Disinfection

Standard sterilization and disinfection procedures for patient-care equipment currently recommended for use (25,26) in a variety of health-care settings—including hospitals, medical and dental clinics and offices, hemodialysis centers, emergency-care facilities, and long-term nursing-care facilities—are adequate to sterilize or disinfect instruments, devices, or other items contaminated with blood or other body fluids from persons infected with blood-borne pathogens including HIV (21,23).

Instruments or devices that enter sterile tissue or the vascular system of any patient or through which blood flows should be sterilized before reuse. Devices or items that contact intact mucous membranes should be sterilized or receive high-level disinfection, a procedure that kills vegetative organisms and viruses but not necessarily large numbers of bacterial spores. Chemical germicides that are registered with the U.S. Environmental Protection Agency (EPA) as "sterilants" may be used either for sterilization or for high-level disinfection depending on contact time.

Contact lenses used in trial fittings should be disinfected after each fitting by using a hydrogen peroxide contact lens disinfecting system or, if compatible, with heat (78 C–80 C [172.4 F–176.0 F]) for 10 minutes.

Medical devices or instruments that require sterilization or disinfection should be thoroughly cleaned before being exposed to the germicide, and the manufacturer's instructions for the use of the germicide should be followed. Further, it is important that the manufacturer's specifications for compatibility of the medical device with chemical germicides be closely followed. Information on specific label claims of commercial germicides can be obtained by writing to the Disinfectants Branch, Office of Pesticides, Environmental Protection Agency, 401 M Street, SW, Washington, D.C. 20460.

Studies have shown that HIV is inactivated rapidly after being exposed to commonly used chemical germicides at concentrations that are much lower than used in practice (27–30). Embalming fluids are similar to the types of chemical germicides that have been tested and found to completely inactivate HIV. In addition to commercially available chemical germicides, a solution of sodium hypochlorite (household bleach) prepared daily is an inexpensive and effective germicide. Concentrations ranging from approximately 500 ppm (1:100 dilution of household bleach) sodium hypochlorite to 5000 ppm (1:10 dilution of household bleach) are effective depending on the amount of organic material (e.g., blood, mucus) present on the surface to be cleaned and disinfected. Commercially available chemical germicides may be more compatible with certain medical devices that might be corroded by repeated exposure to sodium hypochlorite, especially to the 1:10 dilution.

Survival of HIV in the Environment

The most extensive study on the survival of HIV after drying involved greatly concentrated HIV samples, i.e., 10 million tissue-culture infectious doses per milliliter (31). This concentration is at least 100,000 times greater than that typically found in the blood or serum of patients with HIV infection. HIV was detectable by tissue-culture techniques 1–3 days after drying, but the rate of inactivation was rapid. Studies performed at CDC have also shown that drying HIV causes a rapid (within several hours) 1–2 log (90%–99%) reduction in HIV concentration. In tissue-culture fluid, cell-free HIV could be detected up to 15 days at room temperature, up to 11 days at 37 C (98.6 F), and up to 1 day if the HIV was cell-associated.

When considered in the context of environmental conditions in health-care facilities, these results do not require any changes in currently recommended sterilization, disinfection, or housekeeping strategies. When medical devices are contaminated with blood or other body fluids, existing recommendations include the cleaning of these instruments, followed by disinfection or sterilization, depending on the type

of medical device. These protocols assume "worst-case" conditions of extreme virologic and microbiological contamination, and whether viruses have been inactivated after drying plays no role in formulating these strategies. Consequently, no changes in published procedures for cleaning, disinfecting, or sterilizing need to be made.

Housekeeping

Environmental surfaces such as walls, floors, and other surfaces are not associated with transmission of infections to patients or health-care workers. Therefore, extraordinary attempts to disinfect or sterilize these environmental surfaces are not necessary. However, cleaning and removal of soil should be done routinely.

Cleaning schedules and methods vary according to the area of the hospital or institution, type of surface to be cleaned, and the amount and type of soil present. Horizontal surfaces (e.g., bedside tables and hard-surfaced flooring) in patient-care areas are usually cleaned on a regular basis, when soiling or spills occur, and when a patient is discharged. Cleaning of walls, blinds, and curtains is recommended only if they are visibly soiled. Disinfectant fogging is an unsatisfactory method of decontaminating air and surfaces and is not recommended.

Disinfectant-detergent formulations registered by EPA can be used for cleaning environmental surfaces, but the actual physical removal of microorganisms by scrubbing is probably at least as important as any antimicrobial effect of the cleaning agent used. Therefore, cost, safety, and acceptability by housekeepers can be the main criteria for selecting any such registered agent. The manufacturers' instructions for appropriate use should be followed.

Cleaning and Decontaminating Spills of Blood or Other Body Fluids

Chemical germicides that are approved for use as "hospital disinfectants" and are tuberculocidal when used at recommended dilutions can be used to decontaminate spills of blood and other body fluids. Strategies for decontaminating spills of blood and other body fluids in a patient-care setting are different than for spills of cultures or other materials in clinical, public health, or research laboratories. In patient-care areas, visible material should first be removed and then the area should be decontaminated. With large spills of cultured or concentrated infectious agents in the laboratory, the contaminated area should be flooded with a liquid germicide before cleaning, then decontaminated with fresh germicidal chemical. In both settings, gloves should be worn during the cleaning and decontaminating procedures.

Laundry

Although soiled linen has been identified as a source of large numbers of certain pathogenic microorganisms, the risk of actual disease transmission is negligible. Rather than rigid procedures and specifications, hygienic and common-sense storage and processing of clean and soiled linen are recommended (26). Soiled linen should be handled as little as possible and with minimum agitation to prevent gross microbial contamination of the air and of persons handling the linen. All soiled linen should be bagged at the location where it was used; it should not be sorted or rinsed in patient-care areas. Linen soiled with blood or body fluids should be placed and transported in bags that prevent leakage. If hot water is used, linen should be washed with detergent in water at least 71°C (160°F) for 25 minutes. If low-temperature ($\leq 70^\circ\text{C}$ [158°F]) laundry cycles are used, chemicals suitable for low-temperature washing at proper use concentration should be used.

Infective Waste

There is no epidemiologic evidence to suggest that most hospital waste is any more infective than residential waste. Moreover, there is no epidemiologic evidence that hospital waste has caused disease in the community as a result of improper disposal. Therefore, identifying wastes for which special precautions are indicated is largely a matter of judgment about the relative risk of disease transmission. The most practical approach to the management of infective waste is to identify those wastes with the potential for causing infection during handling and disposal and for which some special precautions appear prudent. Hospital wastes for which special precautions appear prudent include microbiology laboratory waste, pathology waste, and blood specimens or blood products. While any item that has had contact with blood, exudates, or secretions may be potentially infective, it is not usually considered practical or necessary to treat all such waste as infective (23,26). Infective waste, in general, should either be incinerated or should be autoclaved before disposal in a sanitary landfill. Bulk blood, suctioned fluids, excretions, and secretions may be carefully poured down a drain connected to a sanitary sewer. Sanitary sewers may also be used to dispose of other infectious wastes capable of being ground and flushed into the sewer.

Implementation of Recommended Precautions

Employers of health-care workers should ensure that policies exist for:

1. Initial orientation and continuing education and training of all health-care workers—including students and trainees—on the epidemiology, modes of transmission, and prevention of HIV and other blood-borne infections and the need for routine use of universal blood and body-fluid precautions for all patients.
2. Provision of equipment and supplies necessary to minimize the risk of infection with HIV and other blood-borne pathogens.
3. Monitoring adherence to recommended protective measures. When monitoring reveals a failure to follow recommended precautions, counseling, education, and/or re-training should be provided, and, if necessary, appropriate disciplinary action should be considered.

Professional associations and labor organizations, through continuing education efforts, should emphasize the need for health-care workers to follow recommended precautions.

Serologic Testing for HIV Infection

Background

A person is identified as infected with HIV when a sequence of tests, starting with repeated enzyme immunoassays (EIA) and including a Western blot or similar, more specific assay, are repeatedly reactive. Persons infected with HIV usually develop antibody against the virus within 6–12 weeks after infection.

The sensitivity of the currently licensed EIA tests is at least 99% when they are performed under optimal laboratory conditions on serum specimens from persons infected for ≥ 12 weeks. Optimal laboratory conditions include the use of reliable reagents, provision of continuing education of personnel, quality control of procedures, and participation in performance-evaluation programs. Given this performance, the probability of a false-negative test is remote except during the first several weeks after infection, before detectable antibody is present. The proportion of infected persons with a false-negative test attributed to absence of antibody in the early stages of infection is dependent on both the incidence and prevalence of HIV infection in a population (Table 1).

Table 1. Estimated annual number of patients infected with HIV not detected by HIV-antibody testing in a hypothetical hospital with 10,000 admissions/year*

Beginning prevalence of HIV infection	Annual incidence of HIV infection	Approximate number of HIV-infected patients	Approximate number of HIV-infected patients not detected
5.0%	1.0%	550	17–18
5.0%	0.5%	525	11–12
1.0%	0.2%	110	3–4
1.0%	0.1%	105	2–3
0.1%	0.02%	11	0–1
0.1%	0.01%	11	0–1

*The estimates are based on the following assumptions: 1) the sensitivity of the screening test is 99% (i.e., 99% of HIV-infected persons with antibody will be detected); 2) persons infected with HIV will not develop detectable antibody (seroconvert) until 6 weeks (1.5 months) after infection; 3) new infections occur at an equal rate throughout the year; 4) calculations of the number of HIV-infected persons in the patient population are based on the mid-year prevalence, which is the beginning prevalence plus half the annual incidence of infections.

The specificity of the currently licensed EIA tests is approximately 99% when repeatedly reactive tests are considered. Repeat testing of initially reactive specimens by EIA is required to reduce the likelihood of laboratory error. To increase further the specificity of serologic tests, laboratories must use a supplemental test, most often the Western blot, to validate repeatedly reactive EIA results. Under optimal laboratory conditions, the sensitivity of the Western blot test is comparable to or greater than that of a repeatedly reactive EIA, and the Western blot is highly specific when strict criteria are used to interpret the test results. The testing sequence of a repeatedly reactive EIA and a positive Western blot test is highly predictive of HIV infection, even in a population with a low prevalence of infection (Table 2). If the Western blot test result is indeterminate, the testing is considered equivocal for HIV infection. When this occurs, the Western blot test should be repeated on the same serum sample, and, if still indeterminate, the testing sequence should be repeated on

a sample collected 3-6 months later. Use of other supplemental tests may aid in interpreting of results on samples that are persistently indeterminate by Western blot.

TABLE 2. Predictive value of positive HIV-antibody tests in hypothetical populations with different prevalences of infection

	Prevalence of infection	Predictive value of positive test*
Repeatedly reactive enzyme immunoassay (EIA)†	0.2%	28.41%
	2.0%	80.16%
	20.0%	98.02%
Repeatedly reactive EIA followed by positive Western blot (WB)‡	0.2%	99.75%
	2.0%	99.97%
	20.0%	99.99%

*Proportion of persons with positive test results who are actually infected with HIV.

†Assumes EIA sensitivity of 99.0% and specificity of 99.5%.

‡Assumes WB sensitivity of 99.0% and specificity of 99.9%.

Testing of Patients

Previous CDC recommendations have emphasized the value of HIV serologic testing of patients for: 1) management of parenteral or mucous-membrane exposures of health-care workers, 2) patient diagnosis and management, and 3) counseling and serologic testing to prevent and control HIV transmission in the community. In addition, more recent recommendations have stated that hospitals, in conjunction with state and local health departments, should periodically determine the prevalence of HIV infection among patients from age groups at highest risk of infection (32).

Adherence to universal blood and body-fluid precautions recommended for the care of all patients will minimize the risk of transmission of HIV and other blood-borne pathogens from patients to health-care workers. The utility of routine HIV serologic testing of patients as an adjunct to universal precautions is unknown. Results of such testing may not be available in emergency or outpatient settings. In addition, some recently infected patients will not have detectable antibody to HIV (Table 1).

Personnel in some hospitals have advocated serologic testing of patients in settings in which exposure of health-care workers to large amounts of patients' blood may be anticipated. Specific patients for whom serologic testing has been advocated include those undergoing major operative procedures and those undergoing treatment in critical-care units, especially if they have conditions involving uncontrolled bleeding. Decisions regarding the need to establish testing programs for patients should be made by physicians or individual institutions. In addition, when deemed appropriate, testing of individual patients may be performed on agreement between the patient and the physician providing care.

In addition to the universal precautions recommended for all patients, certain additional precautions for the care of HIV-infected patients undergoing major surgical operations have been proposed by personnel in some hospitals. For example, surgical procedures on an HIV-infected patient might be altered so that hand-to-hand passing of sharp instruments would be eliminated; stapling instruments rather than hand-suturing equipment might be used to perform tissue approximation; electrocautery devices rather than scalpels might be used as cutting instruments; and, even though uncomfortable, gowns that totally prevent seepage of blood onto the skin of members of the operative team might be worn. While such modifications might further minimize the risk of HIV infection for members of the operative team, some of these techniques could result in prolongation of operative time and could potentially have an adverse effect on the patient.

Testing programs, if developed, should include the following principles:

- Obtaining consent for testing.
- Informing patients of test results, and providing counseling for seropositive patients by properly trained persons.
- Assuring that confidentiality safeguards are in place to limit knowledge of test results to those directly involved in the care of infected patients or as required by law.

- Assuring that identification of infected patients will not result in denial of needed care or provision of suboptimal care.
- Evaluating prospectively 1) the efficacy of the program in reducing the incidence of parenteral, mucous-membrane, or significant cutaneous exposures of health-care workers to the blood or other body fluids of HIV-infected patients and 2) the effect of modified procedures on patients.

Testing of Health-Care Workers

Although transmission of HIV from infected health-care workers to patients has not been reported, transmission during invasive procedures remains a possibility. Transmission of hepatitis B (HBV)—a blood-borne agent with a considerably greater potential for nosocomial spread²⁴ from health-care workers to patients has been documented. Such transmission has occurred in situations (e.g., oral and gynecologic surgery) in which health-care workers, when tested, had very high concentrations of HBV in their blood (at least 100 million infectious virus particles per milliliter, a concentration much higher than occurs with HIV infection), and the health-care workers sustained a puncture wound while performing invasive procedures or had exudative or weeping lesions or microlacerations that allowed virus to contaminate instruments or open wounds of patients (33,34).

The hepatitis B experience indicates that only those health-care workers who perform certain types of invasive procedures have transmitted HBV to patients. Adherence to recommendations in this document will minimize the risk of transmission of HIV and other blood-borne pathogens from health-care workers to patients during invasive procedures. Since transmission of HIV from infected health-care workers performing invasive procedures to their patients has not been reported and would be expected to occur only very rarely, if at all, the utility of routine testing of such health-care workers to prevent transmission of HIV cannot be assessed. If consideration is given to developing a serologic testing program for health-care workers who perform invasive procedures, the frequency of testing, as well as the issues of consent, confidentiality, and consequences of test results—as previously outlined for testing programs for patients—must be addressed.

Management of Infected Health-Care Workers

Health-care workers with impaired immune systems resulting from HIV infection or other causes are at increased risk of acquiring or experiencing serious complications of infectious disease. Of particular concern is the risk of severe infection following exposure to patients with infectious diseases that are easily transmitted if appropriate precautions are not taken (e.g., measles, varicella). Any health-care worker with an impaired immune system should be counseled about the potential risk associated with taking care of patients with any transmissible infection and should continue to follow existing recommendations for infection control to minimize risk of exposure to other infectious agents (7,35). Recommendations of the Immunization Practices Advisory Committee (ACIP) and institutional policies concerning requirements for vaccinating health-care workers with live-virus vaccines (e.g., measles, rubella) should also be considered.

The question of whether workers infected with HIV—especially those who perform invasive procedures—can adequately and safely be allowed to perform patient-care duties or whether their work assignments should be changed must be determined on an individual basis. These decisions should be made by the health-care worker's personal physician(s) in conjunction with the medical directors and personnel health service staff of the employing institution or hospital.

Management of Exposures

If a health-care worker has a parenteral (e.g., needlestick or cut) or a mucous-membrane (e.g., splash to the eye or mouth) exposure to blood or other body fluids or has a cutaneous exposure involving large amounts of blood or prolonged contact with blood—especially when the exposed skin is chapped, abraded, or afflicted with dermatitis—the source patient should be informed of the incident and tested for serologic evidence of HIV infection after consent is obtained. Policies should be developed for testing source patients in situations in which consent cannot be obtained (e.g., an unconscious patient).

If the source patient has AIDS, is positive for HIV antibody, or refuses the test, the health-care worker should be counseled regarding the risk of infection and evaluated clinically and serologically for evidence of HIV infection as soon as possible after the exposure. The health-care worker should be advised to report and seek medical evaluation for any acute febrile illness that occurs within 12 weeks after the exposure. Such an illness—particularly one characterized by fever, rash, or lymphadenopathy—may be indicative of recent HIV infection. Seronegative health-care workers should be retested 6 weeks post-exposure and on a periodic basis thereafter (e.g., 12 weeks and 6 months after exposure) to determine whether transmission has occurred. During this follow-up period—especially the first 6–12 weeks after exposure, when most infected persons are expected to seroconvert—exposed health-care workers should follow U.S. Public Health Service (PHS) recommendations for preventing transmission of HIV (36,37).

No further follow-up of a health-care worker exposed to infection as described above is necessary if the source patient is seronegative unless the source patient is at high risk of HIV infection. In the latter case, a subsequent specimen (e.g., 12 weeks following exposure) may be obtained from the health-care worker for antibody testing. If the source patient cannot be identified, decisions regarding

appropriate follow-up should be individualized. Serologic testing should be available to all health-care workers who are concerned that they may have been infected with HIV.

If a patient has a parenteral or mucous-membrane exposure to blood or other body fluid of a health-care worker, the patient should be informed of the incident, and the same procedure outlined above for management of exposures should be followed for both the source health-care worker and the exposed patient.

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Section 8: OVERHEADS

AIDS = Acquired Immunodeficiency Sndrome

AIDS is caused by HIV = Human Immunodeficiency Virus

Outcome of infection with the virus varies:

- Some have no symptoms.**
- Some have less severe symptoms than those with AIDS.**
- AIDS results from destruction of the immune system which allows diseases to threaten life or health.**

How widespread is HIV Infection?

- . 80,000 cases of AIDS in the U.S. (January 1989)**
- . Over half of these have died.**
- . Estimate: 1.5 million Americans are infected.**
- . Infected people represent all ages, races, men and women, and all lifestyles.**

You cannot "catch" HIV:

- through the air (like a cold or flu)**
- through casual, everyday contact (sharing bathrooms, kitchens, etc.)**
- through nonsexual social situations**
- through insects or mosquitoes**
- through urine, feces, nasal secretions, sputum, vomitus, saliva, sweat or tears from an infected person**

What personal behaviors/practices put you at risk?

- sexual contact with an infected person**
- sharing infected needles**
- infected women to her child at birth**

Blood supply is screened so that risk of infection from transfusion is extremely small.

How can you prevent HIV transmission in your personal life?

Refrain from:

- anal sex**
- vaginal or oral sex with someone who uses IV drugs or engages in anal sex**
- sex with someone you do not know well**
- sex with someone who has multiple sex partners**
- sex without a condom with an infected person**
- sharing IV drug needles**

Occupationally Acquired HIV Infection and AIDS

There are a small number of health care workers who have become infected through work-related duties.

Protect yourself from HIV on the job by avoiding contact with blood and potentially infectious body fluids that can transmit the virus.

Blood is the single most important source of HIV in the occupational setting.

Protect yourself from fluids that are contained in the spine, chest cavity and abdomen, and in the womb surrounding an unborn child because the risk for these fluids is unknown.

The risk of HIV infection through contact with feces, nasal secretions, saliva, sputum, sweat, tears, urine and vomitus is extremely low or nonexistent.

Workers can come into contact with blood or potentially infectious body fluids through:

- . Needlestick**
- . Broken or nonintact skin***
- . Mucous membranes of the eye, nose, and mouth**

***Nonintact skin = chapped, abraded, weeping, or having rashes or eruptions.**

Risk of HIV Infection through:

- . Needlestick: 0.5% following needlestick contaminated with blood from a known infected person.**
- . Chapped/broken skin or mucous membranes: less, but not definitively known**

**Antibodies to HIV in an infected person's blood
can be detected by a test.**

**Persons usually develop antibodies
within 6 to 12 weeks after becoming infected.**

How can you protect yourself from HIV?

- . Use protective procedures and equipment that we are going to describe.**
- . There is no vaccine at the present time.**

What is hepatitis B?

- . Caused by hepatitis B virus (HBV)**
- . Is a disease that damages the liver, causing symptoms that range from mild or inapparent to severe or fatal.**
- . 25% of infected individuals develop acute hepatitis.**
- . 6% to 10% become HBV carriers. Carriers can develop liver disease and are infectious to others.**

- . In 1987, new cases of HBV infection in U.S. = 300,000**
- . 12,000 health care workers become infected through occupational exposure each year.**
- . 500-600 infected health-care workers are hospitalized each year.**
- . 200-300 infected health-care workers die each year with associated diseases.**

What personal behaviors put you at risk for HBV infection?

- Sexual contact with an infected person.**
- Sharing drug needles and syringes with infected person.**
- Since blood supply is screened for HBV, the chance of being infected through transfusion is extremely small.**

What occupational exposures put a worker at risk for HBV?

Contact with blood or potentially infectious body fluids through:

- . Needlestick**
- . Broken or nonintact skin**
- . Mucous membranes of eyes, nose and mouth**

Saliva injected through a human bite can also transmit HBV.

The same protective equipment and procedures that will be discussed for HIV will protect the worker against HBV.

Blood tests are available to detect antibodies for HBV in an infected person.

**Vaccines provide protection against HBV Infection
(90% protection for 7 or more years).**

Vaccines are 70% to 88% effective when given within 1 week of exposure.

**HBIG (hepatitis B Immune globulin) provide some temporary protection
after exposure.**

How are HBV and HIV similar? Different?

	<u>HBV</u>	<u>HIV</u>
<u>Mode of transmission:</u>		
Blood	yes	yes
Semen	yes	yes
Vaginal secretions	yes	yes
Saliva (from a bite)	yes	no
Target in the body	liver	immune system
Risk of infection after needlestick to infected blood	6% to 30%	0.5%
High number of viruses in blood	yes	no
Vaccine available	yes	no

PROTECTIVE EQUIPMENT

Gloves

- disposable protects against blood and fluids**
- heavy protects against sharp objects**
- change if torn or soiled**
- change between handling of different people**

Masks, Eyewear, Gowns

- not needed unless blood or potentially infectious fluids are present**
- masks and eyewear are worn together if you anticipate splashes**
- gowns or apron are worn to avoid soaking of clothes**

**No reported cases of HBV or HIV transmission
from mouth-to-mouth resuscitation.**

**Because other diseases can be transmitted this way,
use protective devices:**

- mechanical respiratory devices**
- pocket mouth-to-mouth resuscitation masks**

How can you protect yourself against HIV and HBV?

- . If you perform tasks that put you in contact with blood, or other potentially infectious body fluids, you should be vaccinated against HBV.**
- . Wear disposable gloves if blood or possibly infectious body fluids are present.**
- . Put on protective equipment if the chance of exposure to blood or possibly infectious body fluids is high.**
- . Carry personal protective equipment on emergency response vehicles.**

HIV cannot live in a dry environment for more than a few hours.

HBV can live in a dry environment for at least 7 days.

Once the virus is dead--it's dead. You cannot "reactivate" it by adding water.

Needles and sharps disposal

- . Needles should not be recapped or manipulated by hand.**
- . Disposable blades and other sharps should be placed in a puncture-resistant container.**
- . Puncture-resistant containers should go to the site of victim assistance.**
- . Reusable needles should be placed in puncture-resistant containers for transport to reprocessing area.**

Handwashing

- . Use a utility or restroom sink for handwashing-- not the food preparation area.**
- . Wash with soap and water.**
- . Waterless antiseptic hand cleanser should be available on response vehicles.**

Carefully read labels and package inserts with germicidal products.

Sterilization: use for instruments that penetrate the skin.

- **Methods:** steam under pressure (autoclave)
gas
dry heat
immersion in EPA-approved chemical for long period

High-level disinfectant: for instruments that come into contact with mucous membranes.

- **Methods:** hot water pasteurization
exposure to same chemical as above, but for shorter period

Intermediate-level disinfectant: for surfaces that come into contact with intact skin.

- **Methods:** use of chemical germicides that are tuberculocidal
bleach (1:100 dilution)

Low-level disinfection: removal of soiling with no visible blood

- **Method:** "hospital disinfectants"

Cleaning and decontaminating spills of blood:

- . Put on gloves and clean with disposable towels. Place soiled towels in plastic bag.**
- . Wear eye and face protection if there is splashing.**
- . Wear shoe covers if amount of blood is great.**
- . Decontaminate with germicide or bleach. Wipe area with clean towels and air dry.**
- . Remove contaminated items, shoe coverings, etc. and place in plastic bag for disposal. Remove gloves last.**
- . Wash hands after removing gloves.**

Laundry

- . Handle soiled items as little as possible.**
- . Bag soiled linen where it was used and place in bags that prevent leakage.**
- . Wash linens in normal laundry cycles according to recommendations of machine and detergent manufacturers.**

Decontaminating and laundering of protective clothing

- . Transport clothing in bags or containers that prevent leakage.**
- . Wear gloves when bagging and placing in washer.**
- . Uniforms should be washed and dried according to manufacturer's recommendations.**

Follow local regulations concerning disposal of infective waste.

An exposure is contact with blood or fluids that have the potential to be infectious through a needlestick, through broken or nonintact skin, or through the mucous membranes of the nose, mouth, or eyes.

Workers who are exposed should:

- . Wash the affected area.**
- . Report the incident and be examined by the proper medical authority for:**

**Assessment
Counseling**

